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A National Environmental/Energy Workforce Assessment. Montana

National Field Research Center, Inc, Iowa City, Iowa

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A National Environmental/Energy Workforce Assessment



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WORKFORCE ASSESSMENT

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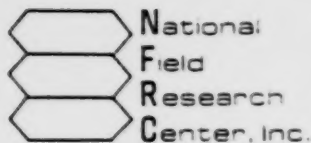
MONTANA

Conducted by:
NATIONAL FIELD RESEARCH CENTER, INC

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PREFACE

The research and development of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT project was conducted under the aegis of the U.S. Environmental Protection Agency by the National Field Research Center, Inc., Iowa City, Iowa, and the Denver Regional Office. This report is a summary of the state of Montana and is one of six state reports within Federal Region VIII.

The State of Montana report presents an overview of the current workforce, projections of workforce requirements (1976-1981), training and certification, and career potential in environmental pollution control and abatement. The environmental areas depicted within this report are: air, noise, potable water, pesticides, solid waste, waste water, and energy conservation/conversion.

FOREWORD

This state report is a product of Phase I of the NATIONAL ENVIRONMENTAL/ENERGY WORKFORCE ASSESSMENT project in Montana. The information contained within this report was obtained by extensive on-site interviews and research of project related materials. The information retrieval was conducted through representative federal, state, and when time allowed, local agencies. Telephone and written surveys were utilized as a secondary research source.

Data which are not documented herein are representative of the best professional judgements of experts currently working in the field.

This study is designed specifically for use as a reference tool at the federal regional level as well as at the state level. It is anticipated that the people of the State of Montana will be the beneficiaries of this endeavor.

National Environmental Energy
Workforce Assessment

Phase I

MONTANA

State Summary

I. AIR

Air quality is considered to be quite good, overall, in Montana. The U.S. Environmental Protection Agency (EPA) has identified Kalispell, Missoula, Helena, Anaconda-Butte, Billings and the Southeastern Coal Resource Area as Air Quality Maintenance Areas (AQMA) and the state has been divided into five Air Quality Control Regions (AQCR).

The major air quality problems in the State of Montana are the result of violations of the copper mining and lead smelting industries, violations by oil refineries, and the wood products industry. Substantial contributors to air quality degradation are fugitive emissions from unpaved roads.

The primary responsibility for air pollution control and abatement in Montana has been allocated to the Air Quality Bureau of the Montana State Department of Health and Environmental Sciences. The Bureau maintains a staff of 29. Approximately 186 personnel are distributed across the local agencies and private industry.

The Air Quality Bureau should experience personnel increases specifically in the engineering category. It has been estimated, however, that industry may double its air pollution control and abatement personnel by 1985.

Professionals within the air pollution control and abatement field should encounter availability of jobs over the next five years. Occupations in this environmental area will result from the development of energy resources.

II. NOISE

Montana does not have an extensive noise pollution control and abatement program at the state or, as yet, at local levels. The Montana Department of Health and Environmental Sciences, Occupational Health and Radiation Bureau is the agency under which the state noise pollution control program is conducted, and the primary responsibilities may be described as predominantly within the realm of research and technical program assistance.

Although there have been substantially no changes in the number of regulations across the state within the last year, gradual changes in attitudes of residents living and working near energy impacted areas should stimulate increased awareness of noise problems. As the citizens develop awareness of the problems, preventive measures will be instituted. These preventive measures will involve planning and a skilled workforce will be required to initiate and conduct noise programs. It is felt that the overall workforce picture, including staffing requirements and variations in job titles, will be much more extensive after 1985. Competition will be keen in the state for the relatively small number of highly skilled technological positions which should be available to 1985.

The greatest number of career opportunities will be manifested at the local level and to a great degree in the area of enforcement. As energy resource development continues in Montana, specialized scientific personnel will be in demand by the private sector.

III. PESTICIDES

The primary responsibility for pesticides programs and activities has been allocated to the Department of Agriculture. The Department of Health and Environmental Sciences periodically conducts studies relative to the reporting of pesticides illnesses and safety procedures, and programs of unusual interest are conducted by the Department of Livestock, in conjunction with the Department of Agriculture.

Within the Department, the pesticide responsibilities are delegated to the Pesticide Division. There are 11 pesticides personnel attached to the Department of Agriculture, approximately 1,651 commercial applicators, and an estimated 12,000 private applicators.

No staff changes are anticipated for the Department of Agriculture over the next five years. The commercial applicators should experience an approximate two percent per annum increase, while the private applicators, consisting mostly of farmers, will experience a one percent per annum increase.

The Department of Agriculture has indicated a willingness to develop cooperative agreements with the state's Indian reservations and technical assistance has been offered.

Career opportunities will include applicator occupations which will require specialized skills and knowledges which may be considered unique to the western areas.

IV. POTABLE WATER

Montana has an abundant supply of water. In an effort to protect the water resources, there are a number of federal and state agencies which conduct water related programs. The Montana Department of Health and Environmental Sciences, Environmental Health Division, however, is the lead agency. The Department has designated the Water Quality Bureau as administrator of the potable water program. The program includes 11 personnel. In addition, there are approximately 623 water treatment and distribution plant operators and 300 administrative and supervisory personnel.

Projected workforce requirements to 1982 indicate an approximate three percent per annum increase for Water Quality Bureau personnel. Water treatment and distribution plant personnel should experience an approximate nine percent per annum increase.

Montana contains portions of three major drainage systems, 25 major dams and enumerable lakes. Water, however, in most of the west is a premium commodity. Therefore, research and innovative planning will be required in order to meet potential water problems. Efficient utilization of the workforce is also a necessity in a state endeavoring to control expansion of government. The level to which workforce opportunities will develop will depend largely on the commitment of the state to meet federal guidelines, the level of federal support necessary to ensure guidelines are met, e.g., the Safe Drinking Water Act, 208 Planning.

V. RADIATION

The Department of Health and Environmental Sciences, Occupational Health and Radiation Bureau, has been allocated the primary responsibility for radiation control in the state. At present, Montana does not have "agreement" status with the Nuclear Regulatory Commission (NRC) regarding licensing of nuclear materials. Dental radiological activities also do not come under the purview of the state. The radiation program, therefore, is not extensive in Montana.

There are three full-time personnel assigned to radiation control activities within the state. Approximately 730 other personnel have been identified who are occupationally exposed to radiation and radioactive materials.

The state personnel should almost double by the year 1982. The persons associated with radiation and radioactive materials across the state will experience an increase in staffing levels, but firm figures are not available at this time.

There is little evidence to support the emergence of new career opportunities in radiation control in Montana. Job opportunities will be available over the next five to ten years in this field, however, many of these occupations will require specialized training. As energy resource development activities continue across the state, radiation related activities should accelerate.

VI. SOLID WASTE

In Montana the solid waste management responsibility has been allocated to the Department of Health and Environmental Sciences, the Environmental Sciences Division, the Solid Waste Management Bureau. The protection of public health by ensuring proper solid waste disposal is the major goal of the Bureau. In order to enforce the solid waste laws and regulations, Bureau personnel work in conjunction with county and local health officers and sanitarians. The Solid Waste Management Bureau presently has a total staff of nine. There are approximately 190 personnel in the public and private sectors in addition to the state staff.

The Department of Health and Environmental Sciences personnel are expected to experience an approximate four percent per annum increase in workforce. The statewide staffing levels should change very minimally over the next five years.

Although the state Bureau staff is estimated to experience an average four percent per annum growth to 1982, state program responsibilities should increase in greater proportion than personnel. The philosophy and underlying commitments of the state's solid waste management program are seen in the strides which have been made recently. The Junk Vehicle component of the program is an innovative example as well as a trend setter throughout the region. In crowded eastern states, junked vehicles are not so obvious and do not present the same visual insults to broad expanses of untarnished landscape.

VII. WASTE WATER

Montana waste water problems are relatively few due to the lack of industry. Agricultural run-off is a major problem, and sludge is increasing as an area of concern. Smelters, refineries, and existing and proposed power plants contribute to the waste water problems of the state. A major effort is currently underway by the lead agency, the Montana Department of Health and Environmental Sciences, Water Quality Bureau, to regulate and educate logging and construction companies regarding the effects of top soil clearing.

Relatively slight increases in staff are anticipated to occur within the waste water area of the Bureau of Water Quality over the next five years. State laboratory personnel who allocate time to waste water duties should experience minimal growth. Estimates regarding the operator workforce anticipate increases of 5% to 12% per annum.

Construction and mining activities in Montana carry the potential for non-point source pollution problems, possibly the greatest water pollution problem in the state. State laws were changed in order to meet federal requirements for administration of the National Waste Discharge Permit Program. Due, in most part, to increased state and federal funds, improvements of domestic sewage and industrial waste has occurred. Non-degradation policies will be applied to new resource development.

VIII. ENERGY

The development of Montana's vast energy resources remains the overwhelmingly serious threat to the state's environmental quality. Currently, in Montana there is no state energy office and no comprehensive state energy policy. There are several agencies which, to varying degrees, impact the environmental problems associated with energy within the state.

In 1973, the Governor outlined energy development challenges to the state and created the Montana Energy Advisory Council. This council assembles, analyzes, interprets and disseminates energy development related findings and is as close to the concept of a state energy office as may be found in Montana.

Career opportunities are anticipated to be available over the next three to five years. Degreed level professionals, i.e., highly trained engineers and scientists will be major components of the future workforce involved in energy related pollution control and abatement endeavors.

The workforce at the state level, however, will present few career opportunities. The major areas of potential employment will be within the private sector. Most likely the Montana labor pool will be unable to fill workforce requirements if energy resource development and conversion activities accelerate.

STATE OF MONTANA - SUMMARY

National Environmental/Energy Workforce Assessment Pollution Control & Abatement Personnel Projected Workforce Requirements (1976-1981) (estimated)

Environmental Area	1976	1977	1978	1979	1980	1981	%/annum growth (average)
AIR ¹	213	219	226	233	240	240	3%
NOISE	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PESTICIDES ²	1,640	1,635	1,689	1,714	1,740	1,766	2%
POTABLE WATER ³	934	997	1,064	1,139	1,223	1,316	6%
RADIATION	735	749	764	779	795	811	2%
SOLID WASTE	200	204	208	212	216	221	2%
WASTEWATER ⁴	628	658	691	726	757	795	5%
ENERGY	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TOTALS	4,350	4,462	4,642	4,803	4,971	5,149	3%

¹ Does not include total private industry growth which may amount to 20% per annum

² Does not include 12,000 private applicators.

³ Major increases will be in operator category.

⁴ Depicts major growth in operator category.

EDUCATION

Montana supports three public community colleges and three private colleges. In addition, the Montana University System includes six entities located across the state. A variety of environmental courses are offered.

The University of Montana was established in 1893 in Missoula. Special facilities for the environmental studies students include: an environmental laboratory; an environmental library; and various bodies of water as well as forested areas in varying degrees of environmental degradation. The University of Montana offers an M.S. degree program in Environmental Studies. B.S. and M.S. programs are available in Resource Conservation.

The Montana College of Mineral Science and Technology or the School of Mines was established in 1895 at Butte, an area of extensive mineral operations. Students work in the mines, mills or smelters. The Montana Bureau of Mines & Geology was established as a department of the College in 1919. Other components of the school include: mineral museum, minerals research center, seismograph station, and computer center. An Environmental Engineering program may lead to a B.S. degree. A new addition to the programs offered at Northern Montana College is the water-wastewater technology curriculum. This is the only post-secondary institution in the Montana University System which has combined and consolidated the vocational technical and academic areas of the water-wastewater training.

LEGISLATION

The environmental/energy legislation for Montana was obtained by request from various agency personnel and through various library references. Summaries of the legislation deemed most relevant to the eight subject areas of the workforce assessment were prepared, and are included in the respective state reports. The following list of laws represents virtually all environmental legislation for the state. Only certain of the following laws were summarized; the list is presented to show, by title, the kinds of laws which have been enacted.

Environmental Policy Act
Clean Air Act of Montana
Montana Pesticides Act
Laws Regarding Public Water Supply
Radiation Control Law
Control of Refuse Disposal Areas Act
Junk Vehicle Disposal Law
Refuse Disposal Districts Law
Laws Regarding Water Pollution
Water Use Act
Open Space Land Act

National Environmental Energy
Workforce Assessment

Phase I

MONTANA

State Report

STATE PROFILE

Derived from the Latin word meaning "mountainous", often referred to as "The Treasure State", "Big Sky Country", "Land of Shining Mountains", Montana is the nation's fourth largest state. 147,138 square miles of plains country are on the east, and rugged, often isolated mountains to the west, with elevations of 1,820 feet to 12,799 feet.

In 1803, President Thomas Jefferson purchased this vast area as part of the Louisiana Purchase. The Plains Indians inhabited this land until the westward expansion forced their migration. The hunting grounds diminished as the white man moved west. The slaughter of buffalo, the discovery of gold and the steady influx of the white population led eventually to the Indian wars of the 1860's and 1870's. 1876 saw Custer's Last Stand at the Little Big Horn and the following year the surrender of Chief Joseph at the Battle of the Bear's Paw saw the sad defeat of these original citizens. Montana was added in 1889 as the 41st star in the Union flag.

Today, 719,000 people, including Indian tribes, inhabit this vast area. Petroleum, coal, copper, natural gas, and gold contribute to a land rich in natural resources. Montana is a leader in agricultural income with livestock the most important product. "Big" describes the farms and ranches with an average size of 2,597 acres. A combined dry-land and irrigation farming assures a balanced agriculture on the more than 65 million acres of land devoted to farms and ranches.

As the nation turns to the west to fulfill future energy needs, the possible incompatibility of the Montana life style and energy development becomes a critical concern. Montana coal production is estimated to reach 393 million tons per year by the year 2000 according to the Northern Great Plains Resource Program. This same study projects a possible 17 new strip mines, seven gasification plants, and four thermal electric plants by that date. The protection of the state's environment under these conditions, and the needed manpower in the pollution control and abatement areas, poses staggering challenges to this great western state.

POLLUTION CONTROL AND ABATEMENT AGENCIES

The following agencies are those which are involved with environmental programs within the state. Each narrative provides a review of the functions and activities of each agency as they relate to environmental programs.

MONTANA DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

The overall purpose of the Department and the Division of Environmental Sciences is to protect the health of the people of Montana. Responsibilities exist in the environmental areas of air, potable water, solid waste, noise, radiation, and waste water. There are six bureaus within the Division as detailed on the organizational charts. There is also one section, the Environmental Impact Statement Section. The Division is housed in Helena with two field offices in Billings and Kalispell.

It should be noted that there is an extensive laboratory section which allocates time to water, waste water, air, pesticides and solid waste. At this writing however, the information is incomplete and thus has not been depicted in the environmental program sections.

MONTANA STATE DEPARTMENT OF
HEALTH & ENVIRONMENTAL SCIENCES

BOARDS & COUNCILS

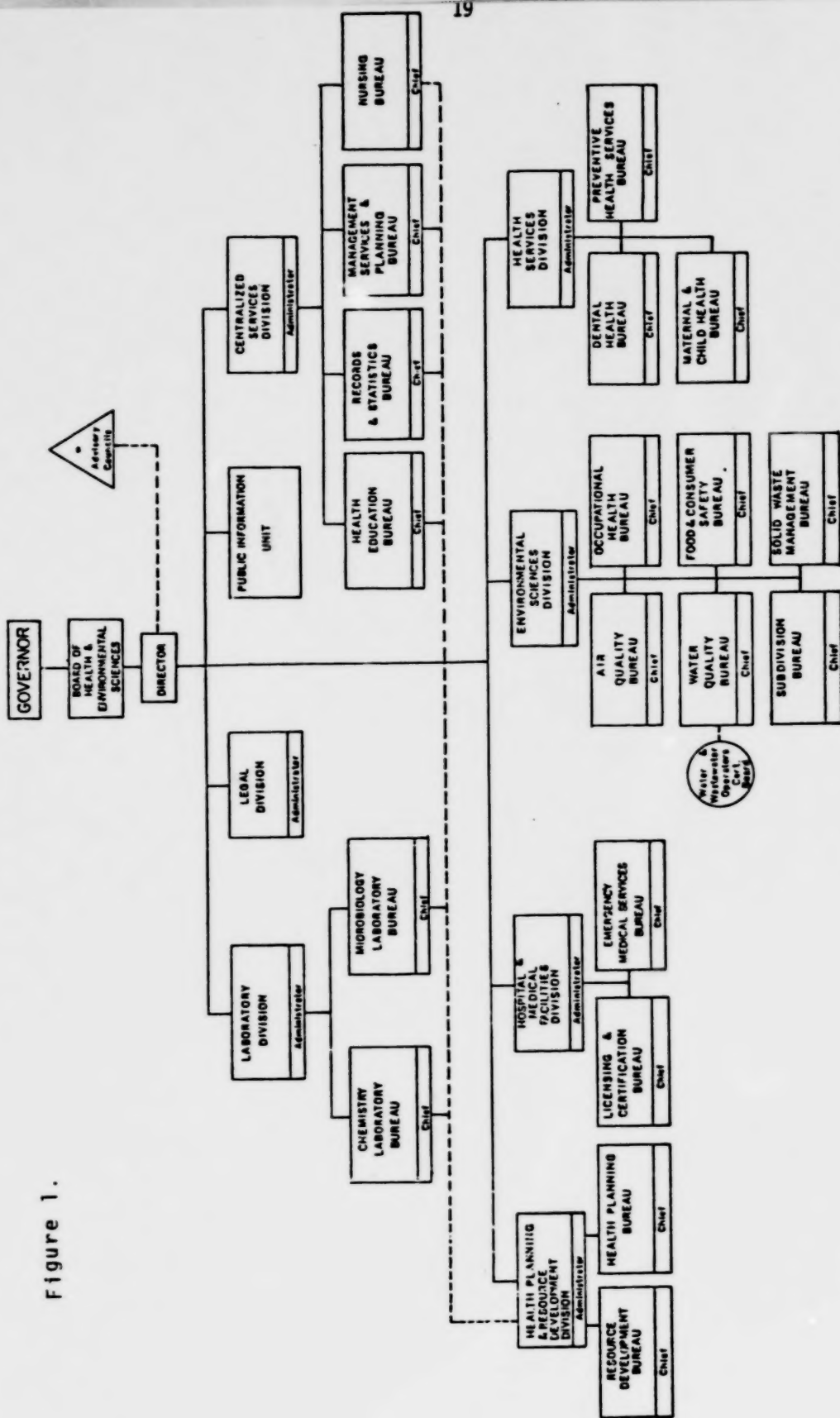
Montana State Board of
Health & Environmental Sciences
Whitefish, Montana

Air Pollution Control Advisory Council
Helena, Montana

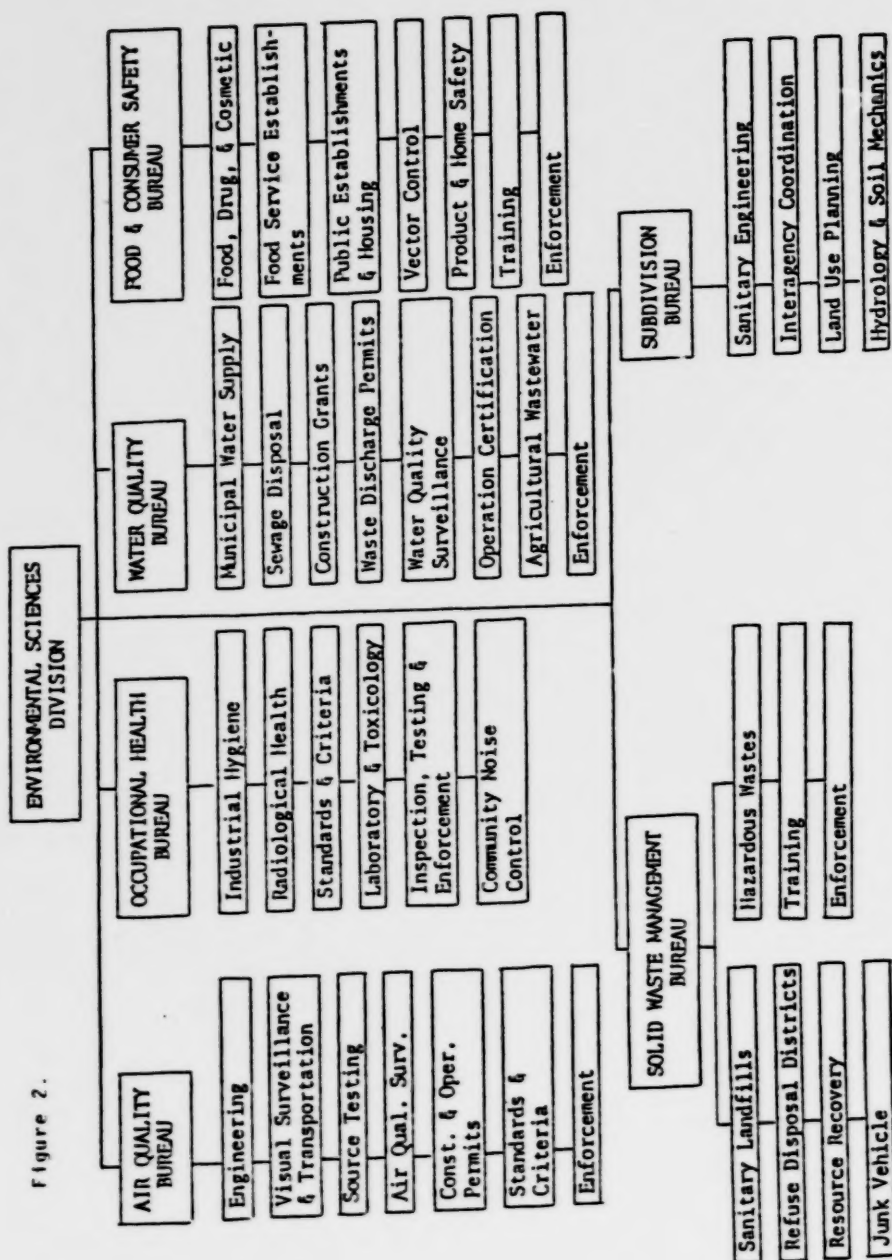
Water Pollution Advisory Council
Circle, Montana

State Mosquito Abatement Advisory Council
Malta, Montana

Figure 1.



DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES



FUNCTIONAL CHART - ENVIRONMENTAL SCIENCES DIVISION
DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

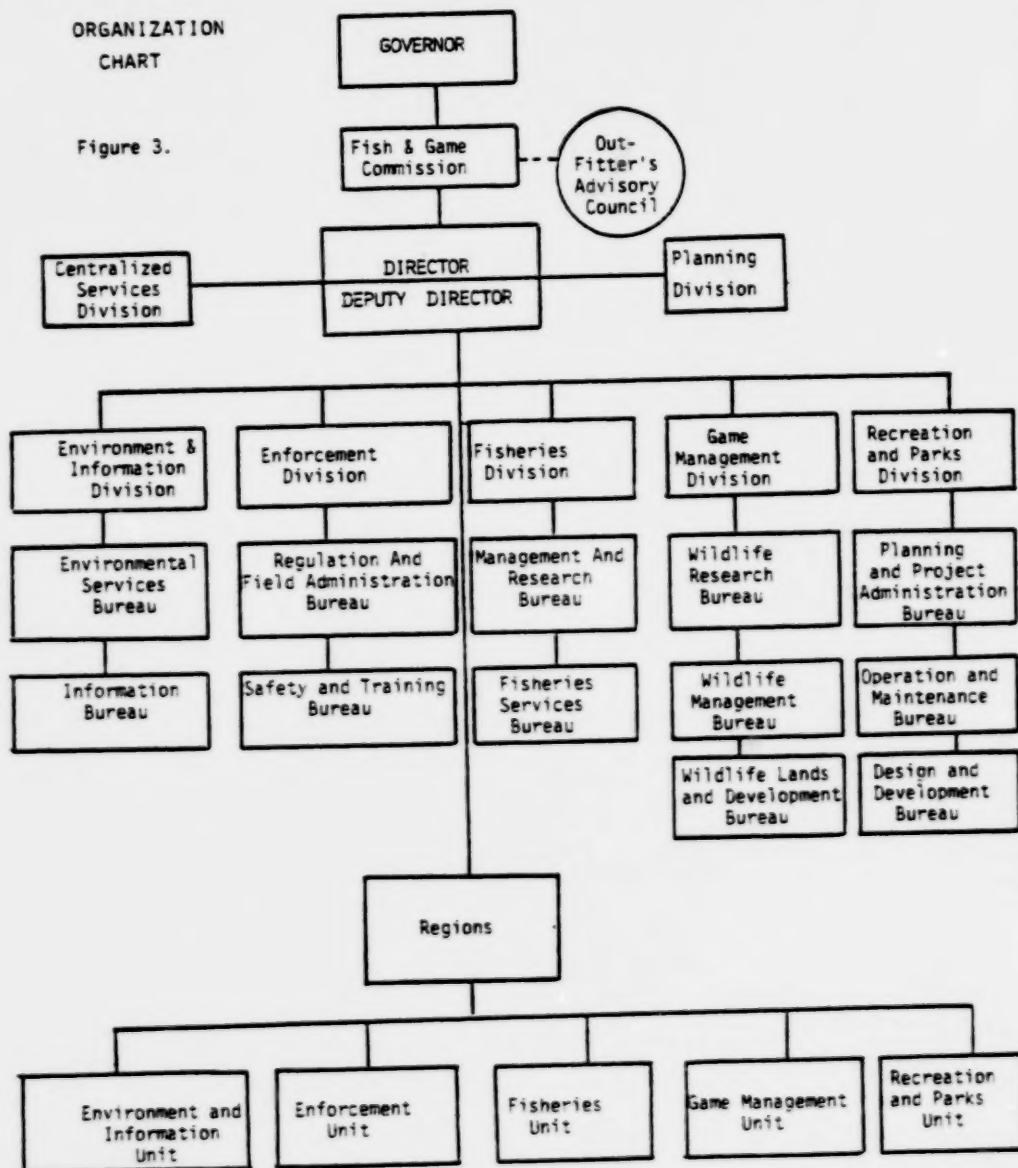
MONTANA DEPARTMENT OF FISH & GAME

The conservation and management of wildlife and the preservation of recreational areas are the primary purposes of the Department of Fish and Game. Recognition of the desires and needs of the people of the state, as well as of the large number of visitors, has resulted in the Department taking an active role in maintaining and enhancing the quality of the environment in the state. To this end an Environment and Information Division was established. Primarily, the Division gathers scientific data are required to assess and to lessen the negative effects of energy and subdivision development. This information is provided to the public in an effort to inform and educate Montanans regarding environmental issues.

MONTANA DEPARTMENT OF FISH & GAME

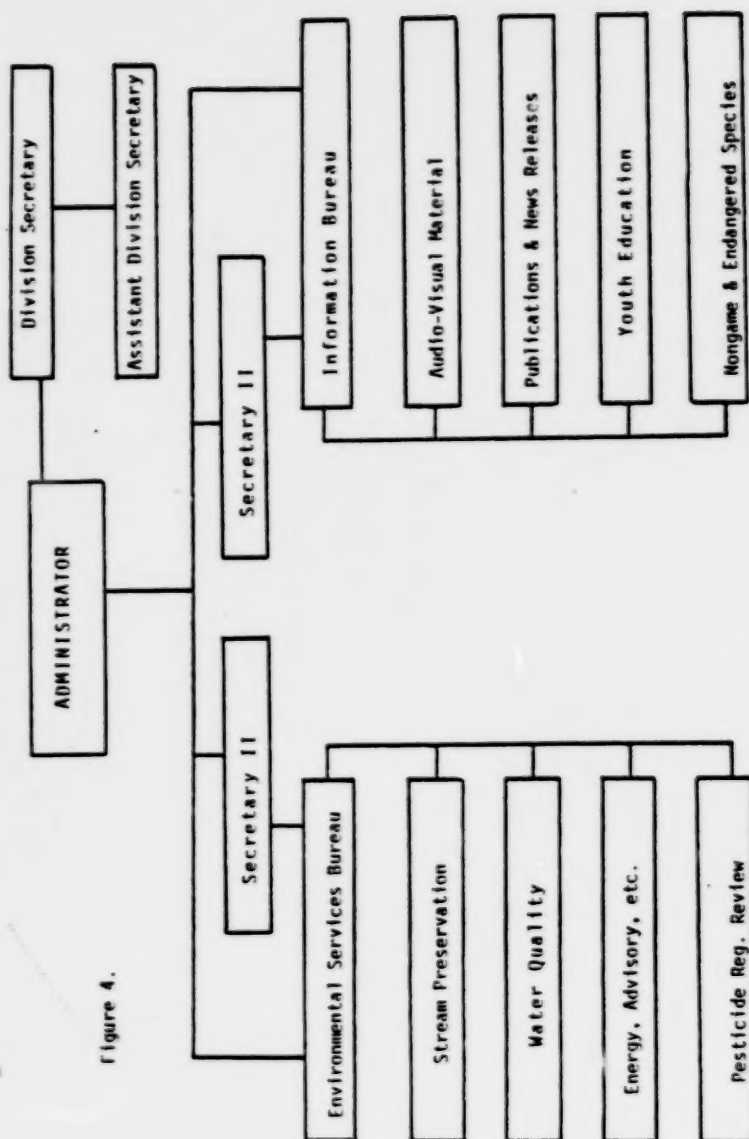
ORGANIZATION
CHART

Figure 3.



MONTANA DEPARTMENT OF FISH & GAME

ENVIRONMENT - INFORMATION DIVISION



MONTANA DEPARTMENT OF AGRICULTURE

In 1971 the State of Montana undertook a reorganization of state agencies. Under the Executive Reorganization Act, 17 executive agencies are presently described as under the director of the Governor.

The Department of Agriculture as one of the 17 existing executive agencies, has the primary purpose of the promotion of the agricultural industry and the enforcement of agricultural oriented laws to protect farmers and consumers alike.

The major functions of the Department include the following:

- ° Enforcement of grain laws;
- ° Maintenance of comprehensive agricultural statistics;
- ° Regulation of commercial feeds and fertilizers;
- ° Agricultural marketing and coordination of transportation;
- ° Inspection and grading of grain;
- ° Quarantine services;
- ° Horticultural inspection;
- ° Wheat research and marketing;
- ° Pesticide regulation;
- ° Rural development programs;
- ° Enforcement of apiary laws; and,
- ° State crops hail insurance.

To administer the agricultural laws and execute the functions and responsibilities of the Department, nine divisions have been designated. These divisions are depicted on the following pages in the organizational charts.

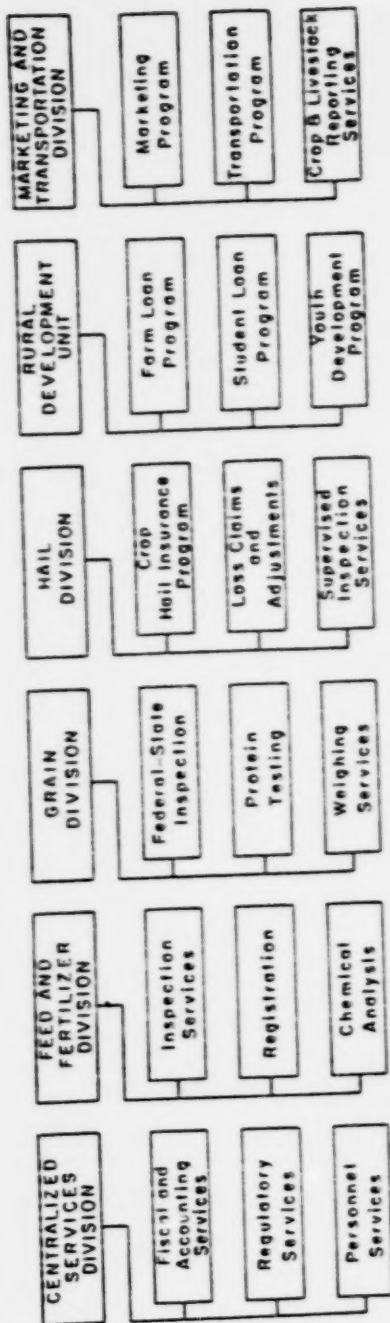
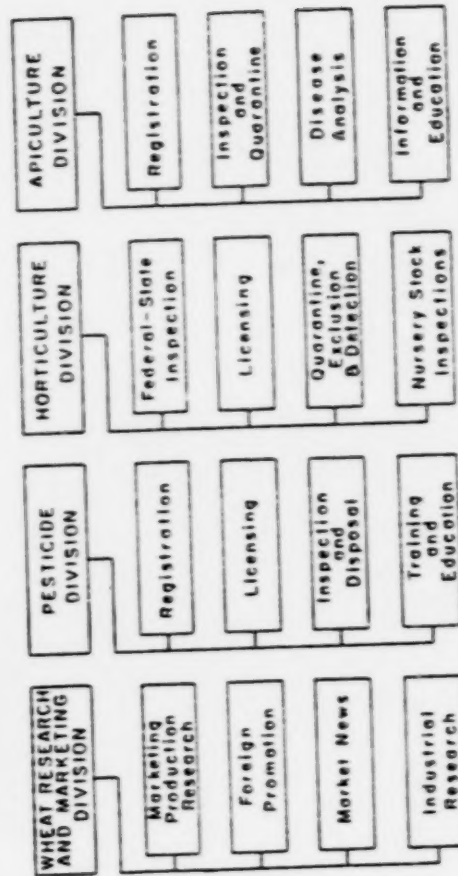


Figure 6.



MONTANA DEPARTMENT OF AGRICULTURE

Pollution Control and Abatement Programs

I. AIR

A. Introduction

The primary responsibility for air pollution control and abatement in Montana has been allocated to the Air Quality Bureau of the Montana State Department of Health & Environmental Services. The Bureau has regulatory authority to insure compliance with the Montana Air Pollution Act (Sec. 69-3906 through 69-3923, RCM, 1947), and the 1970 Federal Clean Air Act. Responsibilities of the Bureau in general include:

- ° All stationary sources of air pollution in the Air Quality Control Regions (AQCR) regarding construction, permit review, plant inspection;
- ° Issuance of permits;
- ° Smoke Schools;
- ° Air Quality Maintenance Plans;
- ° Industry surveillance;
- ° Air sampling;
- ° Visual surveillance; and,
- ° Hazardous waste response.

Acting in an advisory capacity to the Department and to the Air Quality Bureau is the Air Pollution Control Advisory Council. The Governor appoints the ten members with the consent of the Senate. The composition of the Board includes representatives from agriculture, labor, the manufacturing and fuel industries, as well as a practicing physician, a practicing veterinarian, a practicing chemical or environmental engineer, a meteorologist, and a conservationist.

The U.S. Environmental Protection Agency (EPA) has identified Kalispell, Missoula, Helena, Anaconda-Butte, Billings, and the Southeastern Coal Resource Areas as Air Quality Maintenance Areas (AQMA). The following page illustrates these six regions. Air Quality Maintenance Area (AQMA) refers to an area designated by the EPA Administrator as having the potential for exceeding any national standard.

Within Montana there are five Air Quality Control Regions (AQCR). Regional engineers have the responsibility for all stationary sources of air pollution within the AQCR designated as their jurisdiction. The Air Quality Control Regions (AQCR) are depicted on the same page as the Air Quality Maintenance Areas (AQMA).

B. Workforce Profile

The Air Quality Bureau is organized into three sections and two field offices which are located in Kalispell and Billings. The staff includes 23 full-time and six part-time personnel, which are detailed in the following table.

TABLE I

MONTANA DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Air Quality Bureau Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Bureau Chief	1	0%
Engineer	3	4%
Attorney	1	0%
Meteorologist	2	4%
Chemist	2	4%

Figure 7.

AQCR & AQMA BOUNDARIES MONTANA

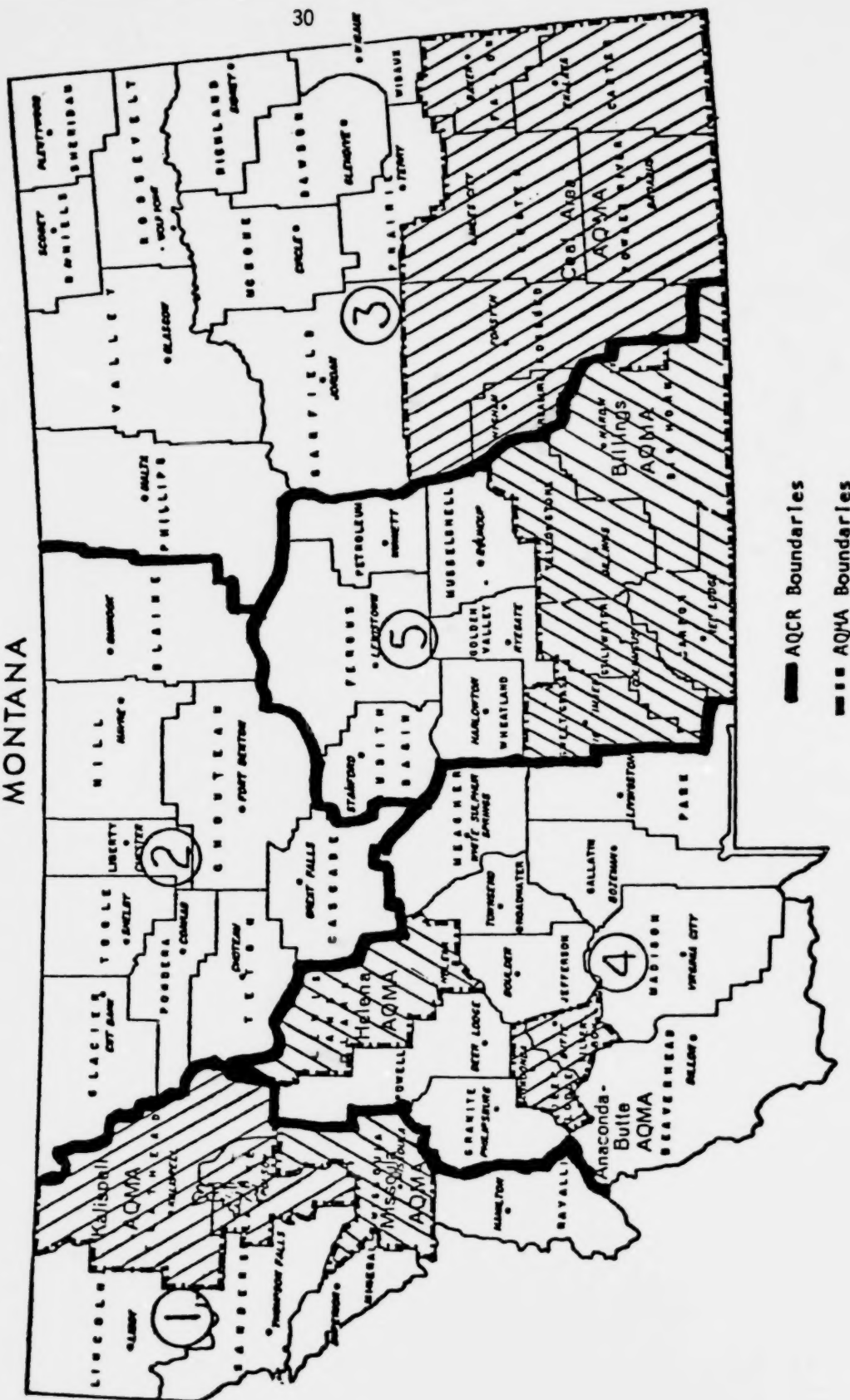


TABLE I
(continued)

Position	1976	%/annum turnover (average)
Chemist ¹	2	*
Instrument Repair Worker	6	4%
Planner	1	4%
Air Analyst	10	4%
Secretarial	3	N/A
TOTAL	31	N/A

¹ Laboratory Division

* Unavailable

An organizational chart for the Air Quality Bureau may be seen on the following page. The three sections of the Bureau as depicted on the chart are: Ambient Air Surveillance, Engineering and Enforcement, and Technical Services.

The Ambient Air Surveillance section is responsible for monitoring sources of air pollution which are caused by vehicles, dust, slash burning, and smoke. This section issues the following types of permits: field stubble; slash burning; weed cleaning; ditch and fence burning; railroad and highway right-of-way burning.

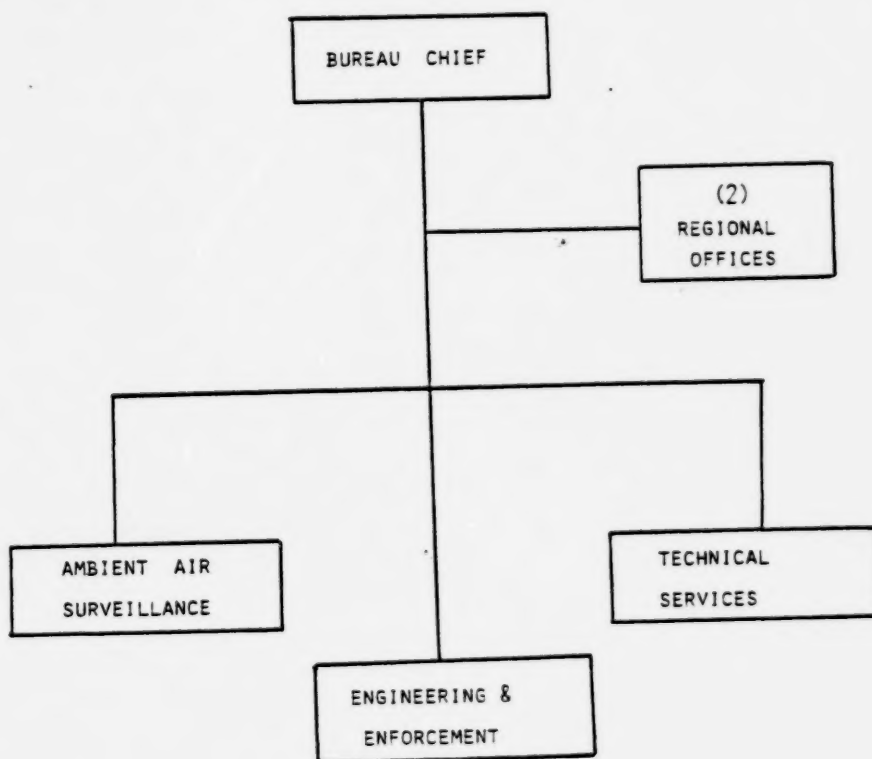
The Engineering and Enforcement Section is responsible for all stationary sources of air pollution. For each of the Air Quality Control Regions (AQCR), one Engineer from this section is assigned. The responsibilities include: plant inspection; Environmental Impact Statements (E.I.S.); tax certifications and construction permits. This Section also offers technical consulting to industry. The engineers have regulatory power to enforce the air pollution laws.

STATE OF MONTANA

DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

Figure 8.



The Technical Services Section performs measurements, laboratory services and assists the Bureau in the development of regulations. The Technical Services Section is also responsible for the Air Quality Maintenance Area (AQMA) Study. The study is funded by the U.S. EPA and will establish baseline data to project ten-year air quality plans. All local and regional plans will be coordinated to establish a data base in order to perpetuate the development of comprehensive legislation relative to air quality and land use.

The Laboratory Division of the Department of Health & Environmental Sciences performs analysis for the Air Quality Bureau. During fiscal year 1976, the Laboratory accomplished 4,767 analyses on 4,208 samples. The Air Chemists (depicted in the above table) assist in field sampling, data collection and laboratory calibrating of field equipment and monitors. During the last year a chain-of-custody procedures document was written which, along with a locking sample cabinet, will provide a legally defensible method of handling samples from collection to analysis to court if necessary.

Across the state there are local air quality agencies located in Missoula, Great Falls, and Billings which employ a total of eight full-time air pollution control professionals. The larger industries which employ air pollution control and abatement personnel include approximately 32 professionals, 12 technicians, and 138 operators and maintenance workers.

C. Workforce Projections

In an effort to describe the future workforce requirements within the environmental area of air pollution control and abatement in the State of Montana, we are indebted to the efforts of the staff of the Chief, Air Quality Bureau, Montana State Department of Health & Environmental Sciences. Workforce projections in this environmental area are extremely difficult to determine as Montana is a coal rich, energy impacted state.

The greatest increases in the workforce are forecast for the private sector. It is estimated that for every three strip mines, at least one full-time professional will be needed. For each coal gasification plant, four to five professionals and twenty maintenance personnel will be required. It has been estimated that industry may double air pollution control and abatement personnel by 1985.

The following table details the proposed workforce increases to 1982 for the Air Quality Bureau.

TABLE II
MONTANA DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Air Quality Bureau
Workforce Projections
to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Bureau Chief	1	1	1	1	1	1	0%	0%
Engineer	3	3	4	5	6	7	4%	19%
Attorney	1	1	1	1	1	1	0%	0%
Meteorologist	2	2	2	2	2	2	4%	0%
Chemist	2	2	2	2	2	2	4%	0%
Chemist ¹	2	2	2	2	2	2	*	*

¹ Laboratory Division
* Unavailable

TABLE II

(continued)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Air Analyst	10	10	10	10	10	10	4%	0%
Instrument								
Repair Worker	6	6	6	6	6	6	4%	0%
Planner	1	1	1	1	1	1	4%	0%
Secretarial	3	3	3	3	4	4	N/A	7%
TOTAL	31	31	32	33	35	36	N/A	3%

The Air Quality Bureau should see an increase of four engineers by 1981. The majority of this engineering staff increase will be on a contract basis. Legislation provides for fees to be paid to the Bureau for the preparation of Environmental Impact Statements. These fees may amount to as much as one percent of the total project cost. Fees are also charged for the determination of industrial requests for air pollution control variances. Evaluation fees are also legislated under a major utility siting act. Under this act, expertise of other state agencies (i.e., the Department of Natural Resources) is utilized.

D. Training and Certification

Training is available from a variety of sources. The Department of Health & Environmental Sciences, the U.S. Environmental Protection Agency (EPA), the Montana Energy Advisory Council, Montana Association of Official Analytical Chemists, and in past years, the Northern Great Plains Resources Program, are sources of training for the Bureau staff as well as for industry and local personnel. The courses of study span a wide range of topics. Correspondence or self-instructional courses are also available.

All Air Quality Bureau staff members are certified Smoke Readers. In order to maintain their certification status, training and recertification are required every six months. Montana has established its own Smoke School which alleviates the problem of out-of-state travel, common in other Rocky Mountain prairie states. Ordinarily no out-of-state personnel attend the Montana Schools.

Table III which follows depicts the types of courses available and an estimated average number of participants trained and certified per annum.

TABLE III

STATE OF MONTANA

Department of Health & Environmental Sciences
Air Quality Bureau
Training and Certification

SPONSOR	LENGTH	PROGRAM	NUMBER/ANNUM (Est.)	
			TRAINED	CERTIFIED
EPA	1 week	Analysis of Atmospheric Metals	2	N/A
EPA	1 week	Gas Chromatographic Analysis of Air Pollutants	2	N/A

TABLE III
(continued)

SPONSOR	LENGTH	PROGRAM	NUMBER/ANNUM (Est.)	
			TRAINED	CERTIFIED
EPA	1 week	Control of Particulate Emissions	2	N/A
EPA	1 week	Principles & Practices of Air Pollution Control	2	N/A
EPA	1 1/2 days	AQMA & Indirect Sources	4	N/A
EPA ¹	1-2 days	Effective Stack Height/Plume Rise	2	N/A
EPA ¹	4-5 days	Air Pollution Effects, Law & Control	2	N/A
EPA	5 days	Diffusion of Air Pollution, Theory & Practice	2	N/A
EPA	3 days	Air Pollution Control Technology	2	N/A
EPA	3 days	Combustion Evaluation	2	N/A
Air Pollution Control Association	*	Conference (attended by Air Chemist)	1	N/A
Montana Association of Analytical Chemists	1 day	Analytical Workshop	2	N/A
Department of Health & Environmental Sciences	1 day	Smoke School	25	25
Montana Energy Advisory Council & State Library ²	1 day	Research Utilization Workshop	4	N/A

TABLE III
(continued)

SPONSOR	LENGTH	PROGRAM	NUMBER/ANNUM (Est.) TRAINED CERTIFIED
Department of Health & Environmental Sciences	2 days	Visible Emission Evaluation	4 N/A

* unavailable

¹ Correspondence course

² May not be available each year

The Air Quality Bureau travels out-of-state not only to the Denver Region VIII office but to North Carolina and Illinois for air pollution control and abatement courses. In state, the Bureau conducts the Smoke School. On an average, 20 to 30 participants are trained and certified every year at six month intervals. Usually five to six participants are from Montana private industry and the remainder are state and local personnel.

E. Career Potential

The professionals within the air pollution control and abatement field should encounter availability of jobs within the state over the next five years. The occupations in this environmental area will result from the development of energy resources, specifically coal. Maintenance workers will see increased opportunities as larger plants are built and as the needs increase for elaborate and expensive air pollution control equipment (i.e., scrubbers).

F. Conclusion

The major air quality problems in the State of Montana are the result of violations of the copper mining and lead smelting industries, as well as violations by oil refineries, and the wood products industry. Substantial contributors to air quality degradation are fugitive emissions from unpaved roads. The U.S. Environmental Protection Agency has determined that the Montana State Implementation Plan (SIP) is inadequate in order to attain and maintain the National Ambient Air Quality Standards (NAAQS) for suspended particulates and sulphur dioxide, and the Bureau is endeavoring to revise the Montana SIP.

The Air Quality Bureau has defined as its number one priority the bringing into compliance of those existing air pollution sources which are presently in violation. Second on the list of priorities is the maintenance of the present state air quality standards. To this end, the Bureau has established an extensive program of surveillance, monitoring and technical assistance. The eventual problem solutions would seem to be compounded by the development of the state energy resources upon demand of an increasingly energy hungry and decreasingly conservation minded public. The efforts on the part of the Air Quality Bureau in Montana are an example to other western energy impacted states.

II. NOISE

A. Introduction

Montana does not have an extensive noise pollution control and abatement program at the state or, as yet, at local levels. In this respect Montana is quite similar to most of the other sparsely populated Rocky Mountain prairie states.

The Montana Department of Health & Environmental Sciences, Occupational Health & Radiation Bureau is the agency under which the state noise pollution control program is conducted. The Division and the Bureau administer 16-2.14(6) - S 14280, "Occupational Noise", but there is no authority over environmental noise.

B. Workforce Profile

The staff of the Occupational Health & Radiation Bureau has the major responsibilities for noise as well as occupational health and radiation. (Refer to Section V entitled, Radiation) The table below details the present staff of the Bureau.

TABLE IV

MONTANA DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Occupational Health & Radiation Bureau Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Bureau Chief	1	0%
Industrial Hygienist	1	40%
Health Physicist	1	40%
Secretarial	1	N/A
TOTAL	4	N/A

TABLE V

STATE OF MONTANA

Municipal Noise Ordinances - 1976

COMMUNITY	ORDINANCE								TOTAL		
	Aircraft	Building	Construction	Nuisance	Railroad	Vehicle	Rec./Vehicle	Zoning			
	a	b							a	b	
Billings			b						0	1	1
Great Falls	a		a	b	a	a	a	a	6	1	7
Helena			a	b	a	a	a	a	5	1	6
Missoula				a		a	a	a	4	0	4
Livingston				b		b			0	2	2
TOTAL (State) a	1	0	2	1	2	3	3	3	15	N/A	15
b	0	0	0	4	0	1	0	0	N/A	5	5
	1	0	2	5	2	4	3	3	15	5	20

KEY: a = regulation includes statistical criteria;
 b = regulation does not include statistical criteria.

SOURCE: Sound and Vibration, December 1975.

The Bureau staff is composed of three professionals who have responsibilities for the noise abatement and control program component. The secretarial support illustrated in the above table is in reality fifty percent of an allocated full-time position. The majority of the work in this program is currently conducted under the auspices of two grants from the U.S. Environmental Protection Agency. One project involves the evaluation of environmental noise in the wood products industry. Another project is being conducted under similar parameters with emphasis upon the environmental noise within the mining industry.

On the local level, Billings, Great Falls, Helena, Missoula and Livingston presently have local noise ordinances as detailed in the following table.

At this time, there are no estimates available for the number of personnel employed in the private sector in the area of noise pollution control and abatement.

C. Workforce Projections

An increase within the state Bureau staff is forecast over the next three years. This will include two Health Physicists and one Industrial Hygienist with an appropriate increase in secretarial help. The secretarial position will increase from the half-time or fifty percent effort of 1976 to a full-time one hundred percent effort in 1981. This, however, is not reflected in the numerical projections. No further increases or decreases are seen within the two years following 1979 without increased federal funds to support the positions.

The following table details the workforce requirements for the Occupational Health and Radiation Bureau to 1982. (Refer to note following Conclusion.)

TABLE VI

MONTANA DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Occupational Health & Radiation Bureau
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Bureau Chief	1	1	1	1	1	1	0%	0%
Industrial Hygienist	1	1	2	2	2	2	40%	20%
Health Physicist	1	1	2	3	3	3	40%	30%
Secretarial	1	1	1	1	1	1	N/A	0%
TOTAL	4	4	6	7	7	7	N/A	13%

D. Training and Certification

There is very little in the way of training presently available in the state relative to the noise pollution control and abatement area. The state personnel as noted in the preceding paragraphs are limited in number and are currently responsible for other activities as well as the previously defined noise program. The state personnel offer technical assistance to the communities and act in an advisory capacity whenever called upon.

E. Career Potential

Because Montana is a sparsely populated state the problems associated with noise pollution control and abatement are not extensive. The

immediate future will be illustrated by career opportunities which are both specialized and not widely available. The greatest number of career opportunities will be manifested at the local level and, to a great degree, in the area of enforcement. As energy resource development continues in Montana, specialized scientific personnel will be in demand by the private sector. Local communities will require persons with technical skills who are able to use, maintain and repair the delicate testing equipment which is utilized throughout the average noise control program.

F. Conclusion

Although Montana presently conducts a noise pollution control and abatement program at the state level, the primary responsibilities may be described as predominantly within the realm of research and technical program assistance.

The local community ordinances are increasing across the country. Although there have been substantially no changes in the number of regulations across the state within the last year, gradual changes in attitudes of residents living and working near energy impacted areas should stimulate increased awareness of the problems inherent in the energy development processes. Noise represents one of these problems. As the citizens develop awareness of the problems, preventive measures will be instituted. These preventive measures will involve planning relative to heavy trucking traffic patterns, as well as to construction and railroad activities. A skilled workforce will be required to initiate and conduct programs in Montana. It is felt that the overall workforce

picture including staffing requirements and variations in job titles will be much more extensive after 1985. Competition will be keen in the state for the relatively small number of highly skilled technological positions which should be available to 1985.

NOTE: Subsequent to the preparation of this Report, Department of Health & Environmental Sciences personnel revised the projected workforce requirements to 1982, to reflect no staff increases through 1981.

III. PESTICIDES

A. Introduction

The State of Montana has had pesticide related legislation in effect in the state since 1947. In 1971, the Montana Pesticide Act, Title 27, Chapter 2, R.C.M. 1947, was passed and all earlier legislation was repealed. The current act is administered by the State Department of Agriculture and is divided into four areas of responsibility:

- ° registration of pesticides;
- ° certification of private and commercial applicators;
- ° licensing of applicators, operators, dealers; and,
- ° enforcement and administration.

The primary responsibility for pesticides programs and activities has been allocated to the Department of Agriculture. The Department of Health and Environmental Sciences periodically conducts studies relative to the reporting of pesticides illnesses and safety procedures.

Two programs of unusual interest conducted by the Department of Livestock, in conjunction with the Department of Agriculture, involve the control and surveillance of rabid skunk populations, and the control of predatory animals. Each of these programs involves certified pesticides applicators with special areas of expertise.

B. Workforce Profile

Within the Department, the pesticide responsibilities are delegated to the Pesticide Division. Enforcement, plant disease, accident investigation, management plans, the certification of applicators and insect

surveillance are major concerns of the Division. The following table details the current Division Staffing levels. .

TABLE VII
MONTANA STATE DEPARTMENT OF AGRICULTURE
Pesticides Division
Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Division	1	0%
Pesticide Enforcement Supervisor	1	0%
Pesticide Specialist	4	3%
Botanist	1	0%
Entomologist	1	0%
Environmental Planner	1	0%
Secretarial	3	N/A
TOTAL	12	N/A

Three of the pesticide specialists listed above, as well as one secretary, are funded by the U.S. Environmental Protection Agency (EPA) to assist with the certification of applicators. During the summer, four part-time employees who are involved in insect detection and surveillance activities are attached to the Division staff.

The Division has the authority to adopt rules and regulations and may also declare an emergency in the event that immediate action regarding registration or application is necessary. Other activities and responsibilities include embargo power, dealer licensing and regulation, equipment inspection, experimental use permits, and storage and/or disposal.

The following table depicts the private and commercial applicator workforce in the state. There are approximately 24,000 farmers in the

state and the Division has estimated that about 50%, or 12,000, will require certification for restricted-use pesticides. The commercial applicator classification includes several categories as seen on the table. The category ordinarily defined as "Right-of-Way" will be designated as public utility pest control but will include the same activities and responsibilities.

TABLE VIII

STATE OF MONTANA

Pesticide Applicators - Commercial & Private
Current (1976) Staffing Level
(estimated)

Category	1976
Commercial Applicator	
Agricultural Pest Control	230
Plant ☐ aerial/ground	190
Animal ☐ Vertebrate	40
Regulatory Pest Control	519
Mosquito	21
Predator	300
Quarantine	1
Rabid Skunk	109
Rodent	2
Weed	86
Forest Pest Control	20
Ornamental & Turf	54
Seed Treatment	143
Aquatic Pest	20
Public Utility (Right-of-Way)	30
Industrial, Institutional, Structural Health Related and Food Manufacturers	535
Public Health	40
Demonstration	60
Non-Commercial	78
Private Applicators	12,000
M-44 Applicators	250
TOTAL	13,729

In addition to the personnel listed above, the Department of Agriculture maintains a laboratory at the University of Montana which conducts analysis of samples for pesticide residue.

C. Workforce Projections

According to the Pesticides Division of the Department of Agriculture, a decline in the number of staff is anticipated. A six to ten percent decrease is projected for the Division during 1977. Subsequently, the Division should experience no increases or decreases in staff to 1982.

The following table illustrates estimated projected workforce requirements for pesticides applicators to 1982, according to Division personnel.

TABLE IX
STATE OF MONTANA
Pesticides Applicators - Commercial & Private
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Non-Commercial/ Commercial Applicator	1629	1624	1678	1703	1729	1755	10%	1%
Private Applicator	12000	12120	12241	12364	12487	12611	N/A	1%
TOTAL	13629	13744	13919	14067	14216	14366	N/A	1%

The commercial applicators are expected to experience a 1% increase to 1982. The energy development activities across the state are anticipated to influence the increase in numbers of commercial applicators

involved in mosquito control and abatement activities to a greater degree than the other categories, according to the Department. These increases will almost exclusively be composed of county personnel.

D. Training and Certification

As described in Section B entitled "Workforce Profile", there are approximately 12,000 private applicators and 1,600 commercial applicators estimated who will require certification in order to utilize restricted-use pesticides. The Cooperative Extension Service will conduct the majority of the training for both commercial and private applicators.

Once the commercial applicator has successfully indicated competency to the Department, by written examination, recertification will be required every four years thereafter. The applicator may take the examination or provide proof of attendance at a Department-approved seminar within eighteen months preceding expiration of certification.

The private applicator will be required to demonstrate competency by means of a written examination (orally if the candidate is unable to read) and by attendance at an approved training session with or without an upgraded quiz. Private applicators will be recertified every six years.

To date, the following has been accomplished regarding training and certification of commercial and private applicators:

TABLE X

STATE OF MONTANA

Pesticides Applicators - Training & Certification
(1976)

Category	Number	
	Trained	Certified
Commercial Applicator	492	472
Private Applicator	2,200	2,200
M-44 Applicator	250	250
TOTAL	2,942	2,922

The Montana Department of Livestock has been delegated responsibility for training of rodenticide and predacide applicators. These applicators are licensed by the Department of Agriculture under the Montana Pesticides Act, upon successful demonstration of competency on a written examination. The applicant must achieve a 70% score on the examination except for those desiring restricted use certification who must attain 80% as a minimum score.

E. Career Potential

A survey of the pesticide research reveals that there will be a limited number of positions available over the next three to five year period. At the degreed level there will be jobs for agronomists, entomologists and those trained in related science fields. Technicians will find work as inspectors, applicators and laboratory assistants.

Rather than new or unique careers emerging, new combinations of existing skills are anticipated. Integrated Pest Management may become a significant factor in employment potential if methods of control prove

successful, and this success can be demonstrated to farmers and ranchers. Still, the advent of new approaches to control will not demand exotic training.

Finally, the workforce potential will depend, in large measure, on federal guidelines being clearly established; and, these guidelines then being fiscally supported by the federal government if the state cannot or does not allocate budgets to come into compliance with federal mandates.

F. Conclusion

The pesticides activities in Montana are extensive and involve several state agencies as well as the U.S. Environmental Protection Agency and Fish and Wildlife Service. The Department of Agriculture has indicated a willingness to develop cooperative agreements with the state's Indian reservations. Offers of technical assistance have been extended to the tribes. Unique to the agricultural, sparsely populated western states are several aspects of the pesticides related program, specifically predator and rabid skunk control.

Skunk rabies has been diagnosed in 22 counties in north-central and eastern Montana. Skunks are considered to be the primary hosts for this disease as no other mammals have been identified in this epizootic of rabies.

The Montana Department of Livestock, in conjunction with the Department of Agriculture, certified applicators for use of strychnine alkaloid eggs and/or paraffin lard baits in order to control these rabid skunk populations. The strychnine alkaloid chemical is highly

toxic and each egg is stamped with the word "poison" in red. The lard bait is a 5/8 inch square of lard, paraffin and strychnine alkaloid which has been rolled in granulated sugar and blood meal. All personnel using the eggs and baits are trained, certified and licensed pesticide applicators. This program is under stringent control by the Departments. The adverse environmental effects, therefore, are reduced and taking of non-target species is minimal.

In order to alleviate the financial loss from predation of livestock, the control of wild canids (coyotes, red fox, gray fox, and wild dogs) is a matter of great concern to the industry and to the state. Presently, Montana is the only state in which private and commercial applicators can be licensed to use cyanide capsules in the spring-loaded ejector mechanism (known as the M-44) for the control of depredating wild canids.

The use of certain predacides and rodenticides on federal land and in federal programs was disallowed in 1972. During the same year, the U.S. Environmental Protection Agency (EPA) prohibited interstate transportation of these pesticides. Thereafter, the only states that could utilize these pesticides were those with the capabilities of manufacturing their own for use on state or private lands. Montana was not one of the states with this capability.

Under Section 5 of the amended Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), Montana was granted an Experimental Use Permit for sodium cyanide in 1974. Montana conducted an experimental program quite successfully for one year. At the end of that period in 1975 the

EPA modified its prohibition on interstate transportation to permit registration of sodium cyanide for control of wild canid predators. Subsequently, in 1975 the Montana Department of Livestock and the U.S. Fish and Wildlife Service were granted M-44 sodium cyanide capsule registrations.

In accordance with this registration the user must be licensed and certified. The Department of Agriculture's regulations regarding the M-44 are, in some areas, more restrictive than the federal restrictions. The Montana regulations will take precedence. These two unusual programs may offer career opportunities in the future. However, these applicator occupations will require specialized skills and knowledge which may be considered unique to the western areas.

IV. POTABLE WATER

A. Introduction

Montana is Missouri River country. The mighty river waters flow through Montana pursuing their course from the edge of Canada to the Gulf of Mexico. Montana is graced with innumerable mountain lakes and thousands of small dams. The largest natural fresh water lake located within one state and west of the Mississippi is 188 square miles of surface area called Flathead Lake. High in the heart of the Glacier National Park is the Triple Divide Peak. From this wild country, water flows in three directions. Many streams, however, are over appropriated. As with other natural resources, the citizens are endeavoring to guard and to protect the high quality waters and to anticipate and plan for natural disasters such as the extreme summer drought which, in 1886, almost destroyed the state's cattle industry. Agriculture and the current energy development in Montana as well as future energy activities present the gravest threats to water and to the land.

In an effort to protect the water resources, there are a number of federal and state agencies in Montana which conduct water-related programs. Among the state agencies are the Department of Planning and Economic Development, Montana Cooperative Extension Service, State Soil Conservation Committee, Montana Department of Fish and Game, and the Department of Health & Environmental Sciences.

Federal agencies within the state which conduct activities in the field of water include the following: the Department of Health, Education and Welfare; the U.S. Bureau of Reclamation; and, the U.S. Corps of Engineers.

Research activities and related studies are being conducted by the University of Montana, the Montana College of Mineral Science and Technology, and the Montana State University.

The Montana Department of Health & Environmental Sciences, Environmental Health Division, has been designated as the lead agency within the state to administer the potable water program. The Division has allocated the responsibilities for drinking water to the Water Quality Bureau.

B. Workforce Profile

The Water Quality Bureau administers the waste water program as well as the water supply or drinking water program. The water supply program involves:

- ° inspection of supplies for bacteriological quality;
- ° review of plans;
- ° maintenance of equipment which is utilized for emergency disinfection of water supplies; and,
- ° training and certification of water treatment plant operators and personnel.

There are approximately 2,000 to 2,500 non-community water supplies in Montana and an estimated 250 community supplies. The state has indicated its intention to assume primary enforcement responsibility

for the Safe Drinking Water Act. In preparation, the Water Quality Bureau has contracted with 30 health departments which are responsible for 54 of the 56 counties across the state. These contracting agencies are currently identifying and assessing the non-community supplies. To date, 735 supplies have been included in these activities.

The following table illustrates the present staff allocated to the water supply section of the Water Quality Bureau.

TABLE XI
DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES
Water Quality Bureau
Potable Water Section
Current (1976) Staffing Level

Position	1976
Sanitary Engineer	4
Chemist*	1
Laboratory Technician*	1
Microbiologist*	1
Other	2
Clerical	1
TOTAL	10

* Laboratory personnel

There is, included in the "other" category, a Certification Program Coordinator and a Training Officer who allocate fifty percent of their time to wastewater related activities. The average annual turnover, two percent, is considered low. For example, during the last five years only one professional has left the Bureau.

The Laboratory Division of the Health & Environmental Sciences Department conducts analyses on drinking water samples for the Water Quality Bureau. During fiscal year 1976, a total of 653 drinking water samples were submitted to the Lab for analysis under the following descriptions:

TABLE XII

DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Laboratory Division
Analyses of Drinking Water
-FY 1976-

Descriptor	Number
Private Drinking Water	291
Fluoride in Drinking Water	267
Public Water Supplies	95
TOTAL	653

An assessment of laboratory facilities was conducted during 1976 by Region VIII U.S. EPA officials pursuant to Sections 106 and 402 of the Safe Drinking Water Act. The EPA concluded that the Laboratory was equipped and capable of providing excellent analytical support for these areas of the Act.

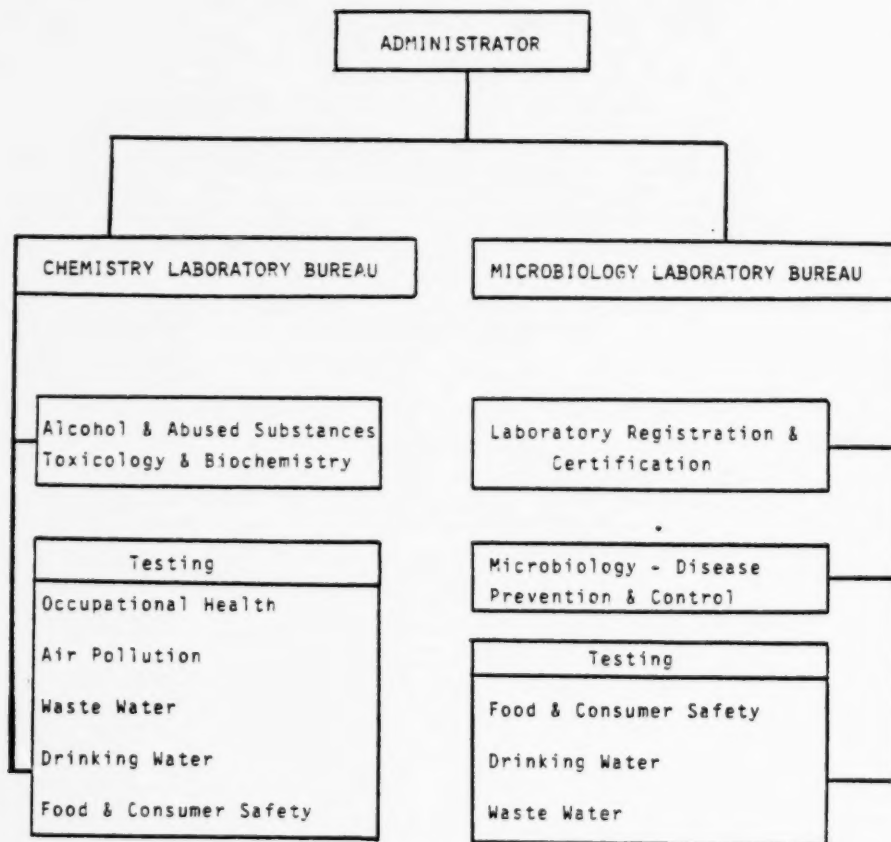
Montana has developed a "Drinking Water Laboratory Certification Program" which awaits legislative action. However, there are 15 laboratories across the state which conduct surveillance of drinking water supplies in compliance with the Act and the requirements. Seven of these have been inspected and certified under the "Interstate Carrier" regulations, and twelve have been approved for drinking water bacteriological testing. (Refer to organizational charts for Laboratory Division on following pages).

STATE OF MONTANA

DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

LABORATORY DIVISION

Figure 9.

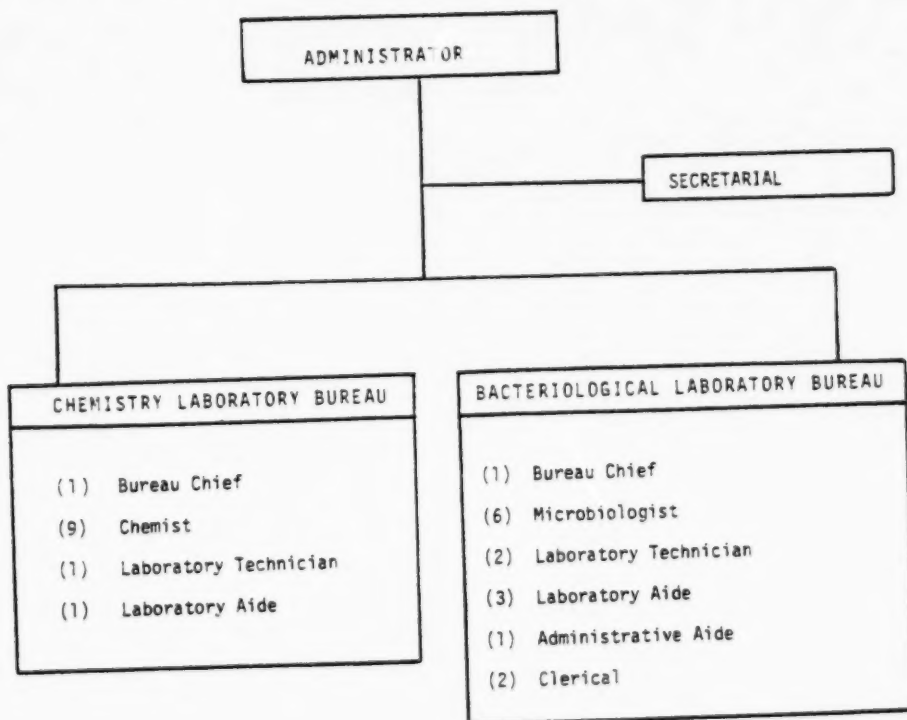


STATE OF MONTANA

DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

LABORATORY DIVISION

Figure 10.



The following table details the five classifications for water plant and distribution personnel within the state.

TABLE XIII

STATE OF MONTANA

Water Plant & Distribution Personnel
Certification Classifications

Class	Water Plant Operators		Water Distribution
	Surface	Ground	Operators
I	over 2,500	over 20,000	over 20,000
II	500 - 2,500	2,500 - 20,000	2,500 - 20,000
III	100 - 500	500 - 2,500	500 - 2,500
VI	100 or less	100 - 500	100 - 500
V	N/A	100 or less	100 or less

Population Equivalents: (Ground supply and Primary Treatment)
Trailer Courts, Campgrounds: class IV: 40-200 hookups; class
 V: 10-40 hookups. Motels: class IV: over 80 units; class V:
 5-20 to 80 units. Bars and Restaurants: class IV: 600-3,000
 patrons max./day; class V: 150-600 patrons max./day.

The above systems are basically classified according to population and complexity of system. The source of water supply, however, whether ground or surface, is also a consideration.

The following table illustrates the present status of the Montana water treatment and distribution plant operators relative to certification.

TABLE XIV

STATE OF MONTANA

Water Treatment & Distribution Plant Personnel
 Certified Operators
 Current (1976) Staffing Level

Classification	(a)	(c)	(b)	(d)	1976
I	104	20	6	0	130
II	69	12	7	0	88
III	73	9	21	3	106
IV	75	22	63	50	210
V	8	7	33	41	89
TOTAL	329	70	130	94	623

(a) municipalities; (b) industry; (c) state and private;
 (d) trailer courts.

The above table illustrates the number of certified water treatment and distribution plant operators. It should be noted that 413 of the above 623 operators (or approximately 66%) are certified waste water operators also. Approximately five percent of the above total hold temporary certification.

In addition to the certified operators shown above, there are approximately 240 to 300 other personnel as defined below.

TABLE XV

STATE OF MONTANA

Water Treatment & Distribution Plant Personnel
 Current (1976) Staffing Level
 (estimated)

Position	1976
Administrative personnel	80 - 100
Supervisory personnel	160 - 200
TOTAL	240 - 300

C. Workforce Projections

A minimal increase in staff is anticipated by the Water Quality Bureau for the potable water section. An estimated one to three per cent per annum growth has been forecasted. Most of the increased workload which ordinarily would require additional Bureau staff will be contracted to the local health departments.

The following table details the estimated workforce requirements over the next five years. These projections are a result of the professional judgements of the Environmental Sciences Division which includes the Certification Coordinator and the extensive efforts of the State Training Officer.

TABLE XVI
DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Environmental Health Division
Water Quality Bureau
Potable Water Section
Workforce Projections
to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Engineer (Chief)	1	1	1	1	1	1	2%	0%
Sanitary Engineer	3	3	3	3	3	3	2%	0%
Training Officer	1	2	2	2	2	2	2%	20%
Certification Coordinator	1	1	1	1	1	1	2%	0%
Secretarial	1	1	1	1	1	1	N/A	0%
TOTAL	7	8	8	8	8	8	2%	3%

The following table details the projected workforce requirements for certified water operators to 1982.

TABLE XVII
STATE OF MONTANA

Water Treatment & Distribution Plant Personnel
Certified Operators
Workforce Projections to 1982
(est.)

Class	1976	1977	1978	1979	1980	1981	%/annum growth (average)
I	130	143	157	172	189	207	10%
II	88	92	96	100	105	110	5%
III	106	116	127	139	152	167	10%
IV	210	235	263	294	329	368	12%
V	89	99	109	122	136	152	12%
TOTAL	623	685	752	827	911	1004	10%

The certification system in Montana is developed from population size and type of plant treatment. In other states an entering operator would become certified at level V and then progress upward to level I. In Montana there are no experience requirements and thus a newcomer may enter the certified community, for example, at class III. Of course, should the city increase in population and the treatment be changed then an equivalent change would be required of the operator.

D. Training and Certification

An annual water operators school was held in November. Included in the basic training are such subjects as microbiology, chemistry, hydraulics and mathematics, as well as the maintenance of water

distribution systems, calibrations of water meters, and lagoon operations. Of special interest this year was the session on rapid infiltration and also the handling of taste and odor problems. It should be emphasized that this school, held at Montana State University, is conducted in order to prepare new operators for certification, and to enable employed personnel to upgrade knowledge and skills.

The training staff, composed of the State Training Officers, travel extensively throughout the state. A large number of one day seminars are held mostly for operators of small systems (IV and V). Five one-day training schools are conducted throughout the state, annually.

Presently in the State of Montana there are no educational or experiential requirements for certification. The certification tests are given twice a year. Any Health Department official, however, may certify a Class IV or a Class V Operator in the field. On-site certification (Class IV and V only) is also allowed for those persons who are unable to travel, or who have made special requests.

E. Career Potential

Career opportunities will likely be available for a number of operators to 1982. Added responsibilities as a consequence of increasingly stringent treatment legislation will require a continuing growth in the workforce both at the entry and advanced levels. Certification for laboratories will also require additional technical and professional staff. Specific technical career areas will include sophisticated skills in hydraulics, instrumentation, valve and pump design,

along with the accompanying maintenance skills. A more limited number of positions will be available for hydrologists, engineers (chemical, mechanical) statisticians, chemists and biologists. The level to which these positions will develop will depend largely on two factors: 1) the commitment of the state to meet federal guidelines; and 2) the level of federal support necessary to ensure guidelines are met, e.g., the Safe Drinking Water Act, 208 Planning. Although less quantifiable, any workforce growth will be determined by the degree to which federal and state authorities are able to cooperate in achieving and maintaining high quality water standards. In short, federal and state officials must jointly work out those schedules necessary for compliance in terms of what is economically reasonable and practical.

F. Conclusion

The fact that Montana is an energy impacted state cannot be over-emphasized. The agricultural community of eastern Montana is reliant upon shallow aquifers. In some areas, coal seams will be found to be overlain by the aquifers and the mining of this resource may result in the disruption of these aquifers. Shallow groundwaters potentially may be contaminated by coal related activities. Depletion of water supplies may also result. Potential problems exist due to the soluble mineral content of overburden. Should such materials be mixed with the aquifers, deterioration of groundwater quality may result. Avoidance of this situation may still result in the eventual mixing of lower quality water with higher quality water. Thus, the

potential exists for the mineralization of groundwaters to the extent that they may become useless. These water related problems are being addressed by the state as policies are determined for the development of Montana's energy resources.

Montana contains portions of three major drainage systems, 25 major dams and thousands of smaller ones, with innumerable lakes. However, water in most of the western states is a premium commodity. Therefore, it could be suggested that research and innovative planning will be required in order to meet problems relative to water availability and utilization.

Long-range planning and efficient utilization of the workforce is a necessity in a state endeavoring to control expansion of state government and agencies. Increased emphasis will be placed on local agencies to supply the workforce required to administer the state's water programs.

V. RADIATION

A. Introduction

The Montana Department of Health and Environmental Sciences, Occupational Health and Radiation Bureau, has been allocated the primary responsibility for radiation control in the state. The regulations which the Bureau administers include Radiation Control (16-2.14(6) - S 14270) and Laser Energy Restrictions (16-2.14(6) - S 14300).

At present Montana does not have "agreement" status with the Nuclear Regulatory Commission (NRC) regarding licensing of nuclear materials. The Montana radiation program has been described by state personnel as being more extensive in other states of the region, e.g., North Dakota, South Dakota and Wyoming, although less money is expended.

B. Workforce Profile

The radiation responsibilities of the Bureau include: non-ionizing radiation (microwave and lasers); surveillance of food, water, soil, and fallout; all ionizing radiation (reactors, isotopes, well logging, uranium mines, medical x-ray); and design of radiation protection.

The following table details the present (1976) staffing levels of the Occupational Health and Radiation Bureau. The staff includes the Bureau Chief and a Health Physicist with secretarial support.

TABLE XVIII

MONTANA DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Environmental Sciences Division
Occupational Health & Radiation Bureau
Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Bureau Chief	1	0%
Health Physicist	1	40%
Secretarial	1	N/A
TOTAL	3	

In the private sector, approximations of staff state-wide include the following as depicted in the table.

TABLE XIX

STATE OF MONTANA

Radiation Personnel
Current (1976) Staffing Level
(estimated)

Position	1976
Radiologic Technologist ¹	41
Medical X-Ray	400
Dental X-Ray	275
Radiochemistry Technician ¹	1
Well Logging Technician ¹	3
Nuclear Medical Technologist ¹	5
Radiation Therapy Technician ¹	2
Miscellaneous Professional	3
TOTAL	730

¹SOURCE: An Analysis of Nuclear Related Technician Manpower
In Western States, U.S. Energy Research and Development
Administration, November, 1975.

The above estimations of radiation personnel across the State of Montana present a composite of the best professional judgements on the part of Bureau staff and state figures as presented in ERDA publication #78, An Analysis of Nuclear Related Technician Manpower In Western States. Of the 675 medical/dental X-ray personnel listed above, approximately 200 are presently licensed.

C. Workforce Projections

Slight increases in staff are projected for the Occupational Health & Radiation Bureau. No increases or decreases are expected to occur before 1979. Staff increases thereafter are questionable. The following table indicates workforce requirements to 1982 for the Bureau.

TABLE XX

MONTANA DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Environmental Sciences Division Occupational Health & Radiation Bureau Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Bureau Chief	1	1	1	1	1	1	0%	0%
Health Physicist	1	1	1	1	2	2	40%	20%
Secretarial	1	1	1	1	1	1	N/A	0%
TOTAL	3	3	3	3	4	4	N/A	12%

No firm numbers are presently available regarding the private sector. However, experts within the field speculate that radiation personnel, excluding medical/dental x-ray, will experience an average 2 percent per annum growth.

D. Training and Certification

Presently in Montana, x-ray machine operators are required to be licensed or certified, with the exception of x-ray use related to dentistry and licensed practitioners of the healing arts. Prior to 1976, there was no licensing or certification program in the State of Montana. However, in October, 1976, licensing became effective.

Training is presently available in Montana in the field of radiation control. The table on the following page (Table XXI) presents an overview of the programs which are currently available in radiation control.

The following table details the training presently available in the state in the field of radiation.

TABLE XXI
STATE OF MONTANA
Educational & Training Programs
Radiation Control
(1976)

School/Facility	Course Offering
Deaconess Hospital Billings	Radiologic Technology
St. Vincents Hospital, Billings	Radiologic Technology Nuclear Medical Technology
Columbus Hospital, Great Falls	Radiologic Technology
Montana Deaconess Hospital, Great Falls	Radiologic Technology Nuclear Medical Technology
St Patricks Hospital, Missoula	Radiologic Technology
Carroll College, Helena	Nuclear Medical Technology Radiobiology Technology

SOURCE: An Analysis of Nuclear Related Technician Manpower In Western States, U.S. Energy Research and Development Administration, November 1975.

E. Career Potential

There is little evidence to support the emergence of new career opportunities in radiation in Montana. Job opportunities will be available over the next five to ten years in this field. Many of these occupations will require specialized training. Health Physicists and engineers with radiation expertise will see the future offering opportunities for their specific talents and skills.

F. Conclusion

As energy resource development activities continue across the state, the environmental area of radiation control most likely will be affected, and radiation related activities should accelerate. If Montana becomes an "agreement" state with the Nuclear Regulatory Commission, radiation personnel as well as activities and responsibilities will undergo substantial change. Although radiation occupations and activities will not be as extensive in Montana as some of the other western states, the future will present new challenges for the state in the field of radiation control.

VI. SOLID WASTE

A. Introduction

In Montana the solid waste management responsibility has been allocated to the Department of Health & Environmental Sciences, the Environmental Sciences Division. The Division has established the Solid Waste Management Bureau, primarily as a regulatory agency, to execute the program. The Bureau administers the Refuse Disposal Area licensing regulation (16-2.14(2) - S 14100), as well as the Motor Vehicle Wrecking Facilities regulation (16-2.14(2) - S 14261). The protection of public health by ensuring proper solid waste disposal is the major goal of the Bureau. In order to enforce the solid waste laws and regulations, Bureau personnel work in conjunction with county as well as local health officers and sanitarians.

According to Solid Waste Systems, (October/November 1976), Montana has a total of 80 sanitary landfills across the state. Eight of these landfills (approximately 10%) are under private management, while 72 (approximately 90%) are public. State personnel have identified 243 disposal sites of which 49% are in compliance.

B. Workforce Profile

The Solid Waste Management Bureau presently has a total staff of nine, distributed across five sections:

- 1) Sanitary Landfill and Disposal Districts;
- 2) Resource Recovery;

- 4) Hazardous Waste Response; and,
- 5) Training and Public Information.

The following table details the current Solid Waste Management Bureau staff.

TABLE XXII

MONTANA DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Environmental Sciences Division
Solid Waste Management Bureau
Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Bureau Chief	1	0%
Registered Sanitarian*	4	2%
Pesticide Supervisor*	1	0%
Public Health Educator*	1	0%
Secretarial	3	N/A
TOTAL	10	N/A

* field personnel

The Sanitary Landfill and Disposal District Section is the major program component of the Bureau. This Section regulates disposal throughout the state. The stated primary objective of this program element is to ensure that sanitary landfills are located and operated in such a manner as to preclude air and water contamination. All persons operating refuse disposal sites must be licensed. Prior to the issuance of the license, however, the Bureau is required to inspect and approve both the plans and the site. Once the facility is licensed, the Bureau is required to

make regular inspections and if warranted, may deny or revoke a license to operate a solid waste management system. The Bureau may request that inspections of licensed facilities be conducted by the appropriate local area sanitarian. This Section also classifies waste and sites, conducts investigations of complaints, and carries out a computer modeling and verification program.

The Resource Recovery Section is responsible for recycling, source reduction, and energy production.

The Junk Vehicle Section conducts a program which controls the disposal of junk vehicles across the state. This program was the first of its kind in the region and is widely acclaimed as a prototype worthy of study by states interested in drafting similar programs. This Section has just completed a statewide solid waste management and resource recovery study.

Under the Montana Junk Vehicle Act of 1973, the Bureau is responsible for the licensing of all automobile wrecking facilities. Upon issuance of the license, the Bureau staff or local sanitarians conduct regular inspections. Under the law, each county is required to establish a free junk vehicle "graveyard" to which anyone may deliver junked vehicles.

The Bureau then contracts with private firms for crushing and recycling. Control, collection and disposal activities are financed by a 50¢ fee on each passenger car and truck under 8001 G.V.W. registered for licensing, and a \$1.50 fee on all title transfers. In this way, the public pays for future junked vehicles upon purchase of a new auto or title transfer.

The Hazardous Waste Response Section is responsible for conducting emergency responses to hazardous materials incidents. This Section also controls landfill disposal of hazardous wastes, operates the hazardous waste storage facility and is developing a hazardous waste disposal site. The Section is also responsible for statewide hazardous waste surveys and surveillance.

The Training and Public Information Section carries out training and is responsible for releases to all media. (Refer to Section D entitled "Training and Certification").

The solid waste personnel in the public and private sectors (excluding state staff) are illustrated on the following table.

TABLE XXIII

STATE OF MONTANA

Solid Waste Management Personnel
Current (1976) Staffing Level
(estimated)

Position	1976	%/annum turnover (average)
Registered Sanitarian	35	6%
Landfill Operator	125	8%
Other	30	N/A
TOTAL	190	N/A

The Sanitarians enumerated above are registered and most hold a B.S. degree. The landfill operators depicted in the above table compose the current workforce for the 245 landfills across the state.

C. Workforce Projections

The following table depicts the anticipated workforce requirements to 1982 for the Solid Waste Management Bureau.

TABLE XXIV

MONTANA DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Environmental Sciences Division Solid Waste Management Bureau Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Bureau Chief	1	1	1	1	1	1	0%	0%
Registered Sanitarian	4	4	4	5	5	5	2%	12%
Pesticide Supervisor	1	1	1	1	1	1	0%	0%
Public Health Educator	1	1	1	1	1	1	0%	0%
Secretarial	3	3	3	3	3	3	N/A	0%
TOTAL	10	10	10	11	11	11	N/A	4%

The Registered Sanitarian depicted as an increase in staff for 1978 and 1979 will be required in order to implement the Resource Conservation and Recovery Act, 1976.

The following table illustrates the estimations of statewide workforce requirements to 1982. A one percent per annum average growth is indicated in this table.

TABLE XXV
STATE OF MONTANA

Solid Waste Management Personnel
Workforce Projections to
1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Registered Sanitarian	35	35	36	36	37	37	6%	1%
Landfill Operator	125	126	127	128	129	130	8%	1%
Other	30	30	31	31	32	32	N/A	1%
TOTAL	190	191	194	195	198	199	N/A	1%

D. Training and Certification

As was briefly mentioned under Section B entitled "Workforce Profile", the Bureau maintains a staff which conducts training and provides information to the public.

The public information wing of this Section develops and circulates news releases to all media, and writes special articles and spot announcements for radio and television. The special articles usually describe successful efforts in sanitary landfill operations, or the achievements relative to organization and establishment of refuse disposal districts. The public information activities are quite successful in educating the people to the philosophy of solid waste management. Upon request special assistance will be allocated to communities in need of technical or general assistance in the area of solid waste management.

The Public Information Officer has developed and widely utilizes slides and 16mm films in community educational activities. These target groups include: junior and senior high school students, youth groups (i.e., statewide 4H groups), university classes, adult seminars.

Training sessions are held for operators of landfills. Special emphasis is placed upon safety. The solid waste management field continues to maintain the highest occupational accident rate. Therefore, safety techniques with equipment and in operations are stressed repeatedly.

E. Career Potential

In Montana the new Resource Conservation and Recovery Act will impact the workforce profile, but not as extensively as if the Solid Waste Program were in a less advanced stage of development. Those presently working in the field (i.e., operators) will benefit from upgrade training as new jobs become available.

Skilled technical and scientific personnel will be utilized in the planning, design and operation of hazardous waste and resource recovery sites.

F. Conclusion

The people of the State of Montana are eager to maintain the high quality of their environmental and to abate pollution of their land and water wherever necessary and possible. To this end, a strong commitment has been made in the area of solid waste.

Although the state bureau staff is estimated to experience an average 4 percent per annum growth to 1982, the program responsibilities should increase in greater proportion. The philosophy and underlying commitments of the state's solid waste management program are seen in the strides which have been made within Montana. The Junk Vehicle component of the program is innovative and a trend-setter throughout the region. In crowded eastern states, junked vehicles are not so obvious and do not present the same visual insults to broad expanses of untarnished landscape. Of interest is the fact that the bureau budget amounted to almost 1.5 million dollars. The state portion amounted to \$1,150,000 which were funds collected in fees under the Junk Vehicle Program.

This year the Solid Waste Management Bureau will prepare Preliminary Environmental Reviews relative to all new applications to operate automobile wrecking facilities. This same activity will be on-going regarding new refuse disposal sites.

Resource recovery and attention to hazardous substances are receiving substantial emphasis in Montana. In cooperation with the national effort to control pesticide residue disposal, the state has embarked upon a program aimed at the establishment of safer methods of handling these and other materials of varying degrees of toxicity.

The Laboratory Division of the Department of Health and Environmental Services assisted the Solid Waste Management Program with the Pesticide Waste Disposal Demonstration project by analyzing 242 samples during the year. The chemist for this project was the recipient of

five days training in the Environmental Protection Agency and Food and Drug Administration pesticides laboratories in preparation for this project. The project involved developing methods for rendering pesticide drum containers neutral enough to allow safe burial in landfills. The Laboratory Division Administrator and two chemists contributed expertise to this project.

VII. WASTE WATER

A. Introduction

The primary responsibility for waste water related activities has been allocated to the Montana Department of Health & Environmental Sciences, the Water Quality Bureau.

The Water Quality Bureau is authorized to enforce the Montana water pollution laws (Section 69-4801 through 69-4827, R.C.M. 1947). Pollution has been defined under the laws as contamination, or alteration of chemical, physical or biological properties of state waters, in excess of Montana water quality standards.

In order to adopt rules and standards and hold hearings relative to matters of water pollution, the seven member Board of Health & Environmental Sciences is appointed by the Governor. Policy guidance and direction are provided by the Water Pollution Control Advisory Council which consists of eight members appointed by the Governor and the Directors of the Departments of Agriculture, Fish & Game, Natural Resources & Conservation, and Health & Environmental Sciences. The Laboratory Division of the Department of Health & Environmental Division of the Department of Health & Environmental Sciences provides analysis of samples. The water pollution control structure is illustrated on the following page.

Organizational Chart Illustrating Water Pollution Control Structure - Montana

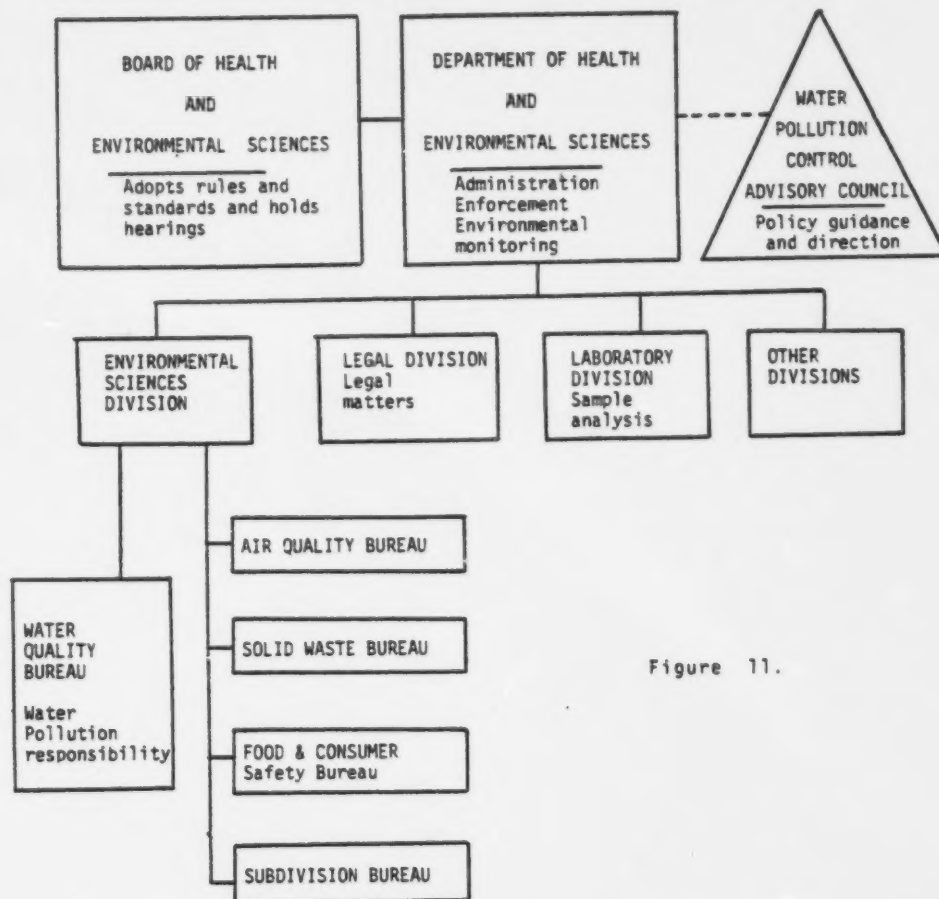


Figure 11.

B. Workforce Profile

The Water Quality Bureau is composed of ten sections, eight of which are waste water oriented. These sections include: (1) Public Information; (2) Sewage Disposal; (3) Construction Grants; (4) Operator Certification; (5) Industrial and Municipal Permits; (6) Agricultural Permits and Non-Point Source; (7) Water Quality Management Plans; and, (8) Surveillance and Monitoring.

The following table illustrates the present Bureau staff assigned to waste water, including efforts on behalf of two field offices located in Kalispell and Billings.

TABLE XXVI
DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES
Environmental Health Division
Water Quality Bureau
(Waste Water)
Current (1976) Staffing Level

Position	1976	%/annum turnover (average)
Bureau Chief	1	0%
Engineer	9	25%
Lab & Field Technician	2	25%
Hydrologist	1	*
Water Quality Specialist	8	10%
Certification Program Coordinator	1	0%
Training Officer	1	0%
Chemist	2	*
Public Health Educator	1	*
Secretarial	5	N/A
TOTAL	31	N/A

* unavailable

Presently the Certification Program Coordinator and the Training Officer allocate approximately 50% of their time to drinking water activities. The above table does not delineate personnel relative to the functions delegated to the Sections. According to the Bureau Chief, approximately 50% of the staff hired must be solicited from outside of the state and imported into Montana due to constraints of salary and opportunities for upward mobility.

The responsibilities of the Bureau are divided among the eight Sections. The Public Information Section endeavors to educate the public, by means of seminars and literature distribution, regarding prevention of waste contaminants from affecting natural stream conditions.

The Sewage Disposal Section reviews disposal plans, conducts inspections and issues waste discharge permits in cooperation with the Department's Subdivision Bureau.

The Construction Grants Section acts as liaison to the U.S. Environmental Protection Agency. The Section establishes priorities, reviews applications, and is responsible for facility plans, and construction plans and specifications. The Operator Certification and Training Section is discussed under part D, entitled "Training and Certification."

The Industrial and Municipal Permit Section issues permits to point source dischargers, monitors waste discharges of municipalities and industrial plants and establishes compliance schedules to prohibit water pollution.

The Agricultural and Non-Point Sources Section issue agricultural permits to feedlot and irrigation operators. These permits are a means of control regarding contaminants entering state waters.

The Water Quality Management Planning Section conducts inventory and testing activities on streams in an effort to identify specific water problems within the 16 water management areas.

The monitoring of water quality through sampling activities conducted across the state are the responsibility of the Surveillance and Monitoring Section. The Laboratory Division of the Department assists the Bureau in analytical activities. The Laboratory analyzed 2,034 water pollution control samples during fiscal year 1976. The following table illustrates the workforce of the Laboratory Division insofar as the personnel are involved in waste water related activities. The total current staff of the Laboratory Division is approximately 20.

TABLE XXVII

DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Environmental Health Division
Chemical & Bacteriological Laboratory Division
Current (1976) Staffing Level
(reflecting waste water activities)

Position	1976	%/annum turnover (average)
Administrator	1	0%
Chemist	4	*
Laboratory Aide	1	*
Laboratory Technician	1	*
Microbiologist	1	*
Secretarial	1	N/A
TOTAL	9	N/A

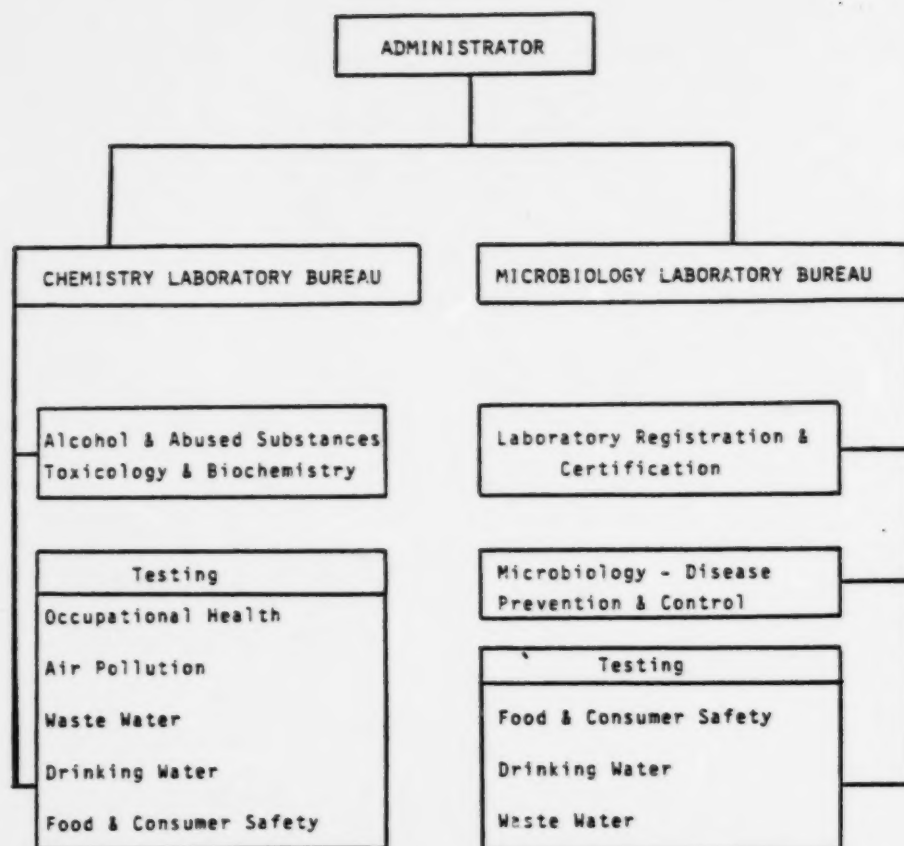
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STATE OF MONTANA

DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

LABORATORY DIVISION

Figure 12.

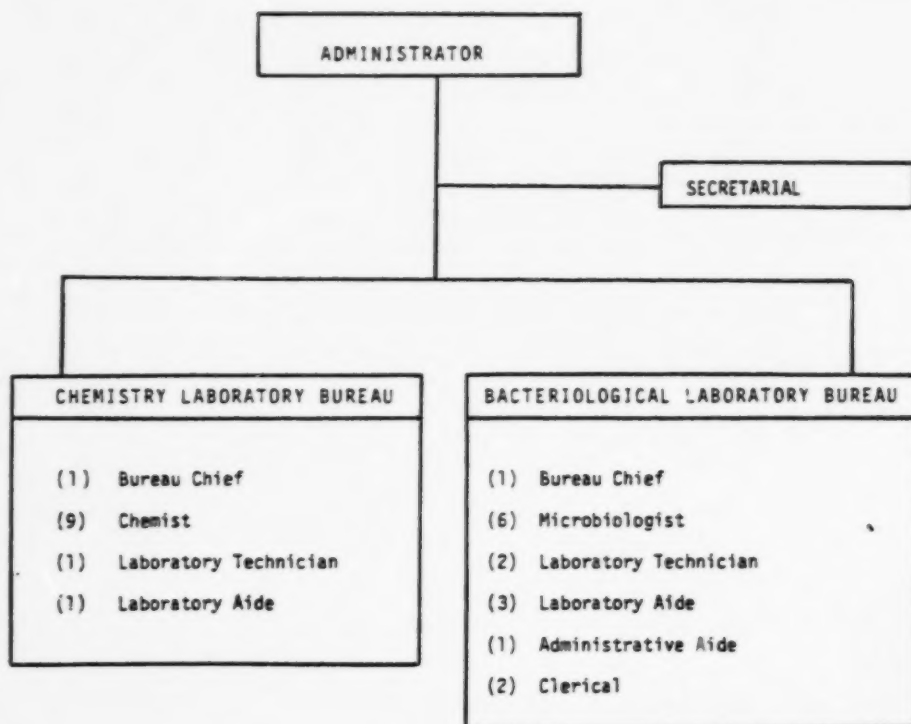


STATE OF MONTANA

DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

LABORATORY DIVISION

Figure 13.



The Administrator and the secretarial support shown on the above table respectively allocate approximately 3 to 10 percent of their time to waste water activities.

The following table details the estimated waste water treatment plant operating personnel in the state.

TABLE XXVIII

STATE OF MONTANA

Waste Water Treatment Plant Operating Personnel
Current (1976) Staffing Level

Class	(a)	(b)	(c)	(d)	1976 total	%/annum turnover (average)
I	77	48	13	0	138	10%
II	51	32	6	0	89	10%
III	62	16	22	1	101	10%
IV	51	7	52	69	179	10%
V	3	6	18	54	81	10%
TOTAL					588	10%

(a) municipalities; (b) industry; (c) state & private; (d) trailer courts.

It is noted that approximately 73% of those certified as waste water treatment operators, are also certified as water operators. Approximately 4% hold temporary certificates.

The following chart details the Montana State Certification Classification. Primary Treatment refers to simple waste water treatment, such as lagoon, septic tank, etc. Secondary Treatment trickling filter systems, aerated lagoons with lift, and package plants are more complex systems.

TABLE XXIX
STATE OF MONTANA

Certification of Operators Relative to Population & Treatment

OPERATOR TREATMENT		CLASSIFICATION AND POPULATION				
		I	II	III	IV	V
Waste Water Plant	primary	over 20,000	2,500 - 25,000	500 - 2,500	100 - 500	100 or less
	secondary	over 2,400	500 - 2,500	100 - 500	100 or less	

C. Workforce Projections

Relatively slight increases in staff are anticipated to occur within the waste water area of the Bureau of Water Quality over the next five years. The table below illustrates the workforce requirements to 1982.

TABLE XXX
DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

Environmental Health Division
Water Quality Bureau
(Waste Water Section)
Workforce Projections
to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Bureau Chief	1	1	1	1	1	1	0%	0%
Engineer	9	9	10	10	10	10	25%	2%

(continued)

Position	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
Lab & Field Technician	2	2	3	3	3	3	25%	10%
Water Quality Specialist	8	8	9	9	9	9	10%	3%
Training Officer	1	2	2	2	2	2	0%	20%
Hydrologist	1	1	1	1	1	1	*	0%
Certification Program Coordinator	1	1	1	1	1	1	0%	0%
Chemist	2	2	2	2	2	2	*	0%
Public Health Educator	1	1	1	1	1	1	*	0%
Secretarial	5	5	5	5	6	6	N/A	4%
TOTAL	31	32	35	35	36	36	N/A	3%

* unavailable

The Laboratory Division personnel who allocate time to waste water duties should see very little increase in numbers, if any, over the next five years.

Workforce requirements for plant operating personnel will illustrate increases over the next five years. The following table depicts the workforce requirements to 1982.

TABLE XXXI

STATE OF MONTANA

Waste Water Treatment Plant Operating Personnel
Workforce Projections to 1982 (est.)

Class	1976	1977	1978	1979	1980	1981	%/annum turnover (average)	%/annum growth (average)
I	138	152	166	180	194	208	10%	10%
II	89	93	98	102	107	111	10%	5%
III	101	113	126	150	168	168	10%	11%
IV	179	205	231	257	283	309	10%	12%
V	81	93	105	117	129	141	10%	12%
TOTAL	588	656	726	806	881	937	10%	7%

D. Training and Certification

According to the state law, the person in direct responsible charge of the operations of a waste water treatment plant serving ten or more families or serving an industry with ten or more employees, must be certified. The operator in responsible charge must hold certification equal to or above the classification of the system. The classification system is predicted on complexity of system and population equivalent. At the present time, the state does not have experience or education requirements for certification, but an examination must be passed. Class I, II, and III exams are given twice a year, while Class IV and V exams may be given in the applicants locality by any staff member of the Environmental Sciences Division. Certificates must be renewed each year.

Annual week-long schools for operator training are given in November at Montana State University, Bozeman. An Associate Degree

in Environmental Health, Water and Waste Water Technology, is presently being offered through Northern Montana College, Havre, while the Science Department also conducts a ten-month entry level certificate program.

The following table outlines the training and certification efforts across the state within the past year.

TABLE XXXII
STATE OF MONTANA
Waste Water Training
(1976)

Sponsor	Length	Program	Number	
			Trained	Certified
Carroll College	1 week	Statistics	2	N/A
Laboratory Division	3(courses) @ * days	Waste Water Clinical Micro- biological testing	46	N/A
Water Quality Bureau	1 week	Instruction in phenol analysis to Billings lab personnel	*	N/A
Laboratory Division	1 day	Instruction in Analytical Methods re: discharge permits to Helena Sewage Treatment Plant Personnel	*	N/A
Water Quality Bureau	1 day	Operator Training	18	18
Water Quality Bureau	1 day	Operator Training	18	12

TABLE XXXII
(continued)

Sponsor	Length	Program	Number	
			Trained	Certified
Water Quality Bureau	1 day	Operator Training	17	12
Water Quality Bureau	1 day	Operator Training	19	*
Water Quality Bureau	1 day	Operator Training	18	*
Water Quality Bureau	3 day	Workshop Activated Sludge	27	N/A
Water Quality Bureau & Laboratory Division	5 day	Microbiological & Chemical Analysis of Wastewater	15	N/A
Water Quality Bureau & Laboratory Division	5 day	Microbiological & Chemical Analysis of Wastewater	15	N/A
Water Quality Bureau & Laboratory Division	5 day	Microbiological & Chemical Analysis of Wastewater	15	N/A
Water Quality Bureau	5 day	Operator Training at Montana State	76	61
Water Quality Bureau	3(courses) @ * days	Operator Training	56	54
Water Quality Bureau	2(courses) @ * days	Operator Training	37	33

Correspondence courses are also available. One course is available through the Department of Civil Engineering, California State University

and is entitled "Operation of Waste Water Treatment Plants". Another course which is available through Michigan State University is entitled "Supervisory Management in the Water/Wastewater Field".

E. Career Potential

Wide reaching federal mandates will require new plants and new, more complex treatment methods. As a consequence these plants, both on-line and anticipated, will demand more operators at the entry and advanced levels. New and unique skills will not emerge, but rather new combinations of existing operations and maintenance abilities. There will also be a limited number of positions for persons in management and administration although these slots will probably be filled by experienced operators. Laboratory positions for chemists, biologists and technicians will also find a limited number of openings at the larger treatment facilities. There will be an additional and continuing need for individuals with backgrounds in hydraulics and pump maintenance and design as well as those trained in instrumentation. Still, future workforce potential will be a corollary of the extent of state and federal cooperation in meeting and maintaining effluent standards.

F. Conclusion

The industrial problems in the waste water area are relatively few due to the lack of industry within the state. As previously mentioned, agricultural run-off is a major problem, and sludge is increasing as an area of concern. Pursuant to this, a special three-day training

seminar was held on the Operational Control of Activated Sludge. The need for four strategically placed bacteriological labs has been expressed by Water Quality Bureau personnel. Four "208" areas have been designated across the state, and the Montana "208" Plan awaits approval by the Environmental Protection Agency.

One of the most serious threats to the environment of the State of Montana is still defined as the development of energy resources, specifically coal. As with other environmental areas, smelters, refineries, and existing and proposed power plants contribute to the problems of the state.

A major effort is currently underway by the Water Quality Bureau to regulate and educate logging and construction companies on the effects of top soil clearing which has the potential to affect water quality.

Mining activities carry the potential for non-point source pollution problems as do construction activities. Possibly the greatest water pollution problem in Montana is non-point source pollution.

Changes were made in state laws in order to meet federal requirements for the state to administer the National Waste Discharge Permit Program (NPDES). Due in most part to increased state and federal funds, improvements of domestic sewage and industrial waste treatment have occurred. A non-degradation policy will be applied to new energy resource developments and discharges which will be a contributing factor in the preservation of the environment of the state.

VIII. ENERGY

A. Introduction

The development of Montana's vast energy resources remains the overwhelmingly serious threat to the state's environmental quality. Recreational land is being consumed by massive subdivisions. The lifeblood of Montana, water, will most assuredly be affected by mining activities, as well as by refineries and smelters. Energy development will place increasing demands upon the open land and the clean air and water of the state.

Excellent laws have been enacted which govern the use and development of energy resources within Montana. Montana is viewed as an accessible source of energy fuels by an increasingly energy-hungry society. However, according to a Montana Energy Advisory Council paper, Montana Energy Position Paper, by Theodore H. Clack, Jr., June, 1976, oil reserves may be depleted within six years, followed by natural gas depletion in approximately twenty years.

The U.S. Geological Survey indicates that coal is available in sufficient quantities in Montana to last for hundreds of years at the current rate of production. Therefore, it is the development of coal with inherent problems and ramifications which will influence the state's development of policies and programs to ensure that energy resource extraction and conversion proceed in conjunction with present and future best interests of the people, and of the state.

B. Workforce Profile

Currently, in Montana there is no state energy office and no comprehensive state energy policy. There are several agencies which, to varying degrees, impact the environmental problems associated with energy within the state. Representative of these agencies are the Department of Fish & Game, the Department of Health and Environmental Sciences, the Department of State Lands, and the Department of Natural Resources & Conservation.

In 1973, the Governor outlined energy development challenges to the state and created the Montana Energy Advisory Council. This council assembles, analyzes, interprets and disseminates energy development related findings and is as close to the concept of a state energy office as may be found in Montana. Most of the state agencies are represented on this council, and the Chairman is The Honorable Bill Christiansen, Lieutenant Governor, State of Montana. Research efforts on the part of the Energy Advisory Council are extensive and well-known throughout the west.

The Department of Natural Resources & Conservation is charged with the responsibility of preserving or conserving the natural resources of the state except for fish and game and land under mining development.

The Department of State Lands manages lands granted to Montana by the federal government. Responsibilities include the leasing of these lands for mineral development, the sale of land and/or minerals, and the administration of activities relative to reclamation of mining areas.

The Department of Health & Environmental Sciences intersects all environmental activities relative to energy development and/or conversion. As mentioned in Sections I through VII, activities on behalf of this agency are extensive.

Working across most of the environmental areas and in response to the development of energy, the Department of Fish & Game conducts coal related projects, gathers and disseminates scientific information needed to minimize adverse effects of development and provides public information and educational programs related to protecting Montana's natural resources.

While no firm workforce figures are available, the above agencies are representative of the on-going activities within the state relative to energy extraction and conversion pollution control and abatement responsibilities.

C. Workforce Projections

Most of the agencies depicted in the above paragraphs will experience minimal increases in staff over the next five years. Montana, like many western states, is endeavoring to discourage proliferation of state agencies and employees. At the same time, more efficient utilization of manpower and other agency resources is encouraged. Specific projections for this workforce segment cannot be presented at this time.

D. Training and Certification

Educational programs and activities are currently ongoing within most of the agencies. The Energy Advisory Council prepares studies

regularly for dissemination region-wide. The Department of Fish and Game also disseminates information and environmentally educative materials through the auspices of seven Regional Information Officers.

Montana currently does not have the institutions to train large numbers of highly skilled personnel for those job categories which would be required if energy conversion activities were to proceed at an accelerated rate. The Montana Energy Advisory Council has suggested that considerable retraining would be required if Montana were to supply the requisite workforce for energy extraction and conversion facilities (as opposed to importation of the labor force).

E. Career Potential

Career opportunities are anticipated to be available over the next three to five years. Degreed level professionals, i.e., highly trained engineers and scientists will be major components of the future workforce involved in energy related pollution control and abatement endeavors.

The workforce at the state level, however, will present few career opportunities. The major areas of potential employment will be within the private sector. Most likely the Montana labor pool will be unable to fill workforce requirements if energy resource development and conversion activities accelerate.

F. Conclusion

Montana's vast energy resources, especially coal, will be developed as national needs continue to increase. But Montana has recognized the

benefits and the detriments, to the people and to the land, of uncontrolled development. According to the Montana Energy Position Paper previously cited, the state will tend to discourage large scale and rapid in-migration; large scale energy conversion facilities will not be encouraged unless they are to meet Montana energy needs; and, tax assessments received from nonrenewable resource extraction will be invested in the renewable resource base of the state.

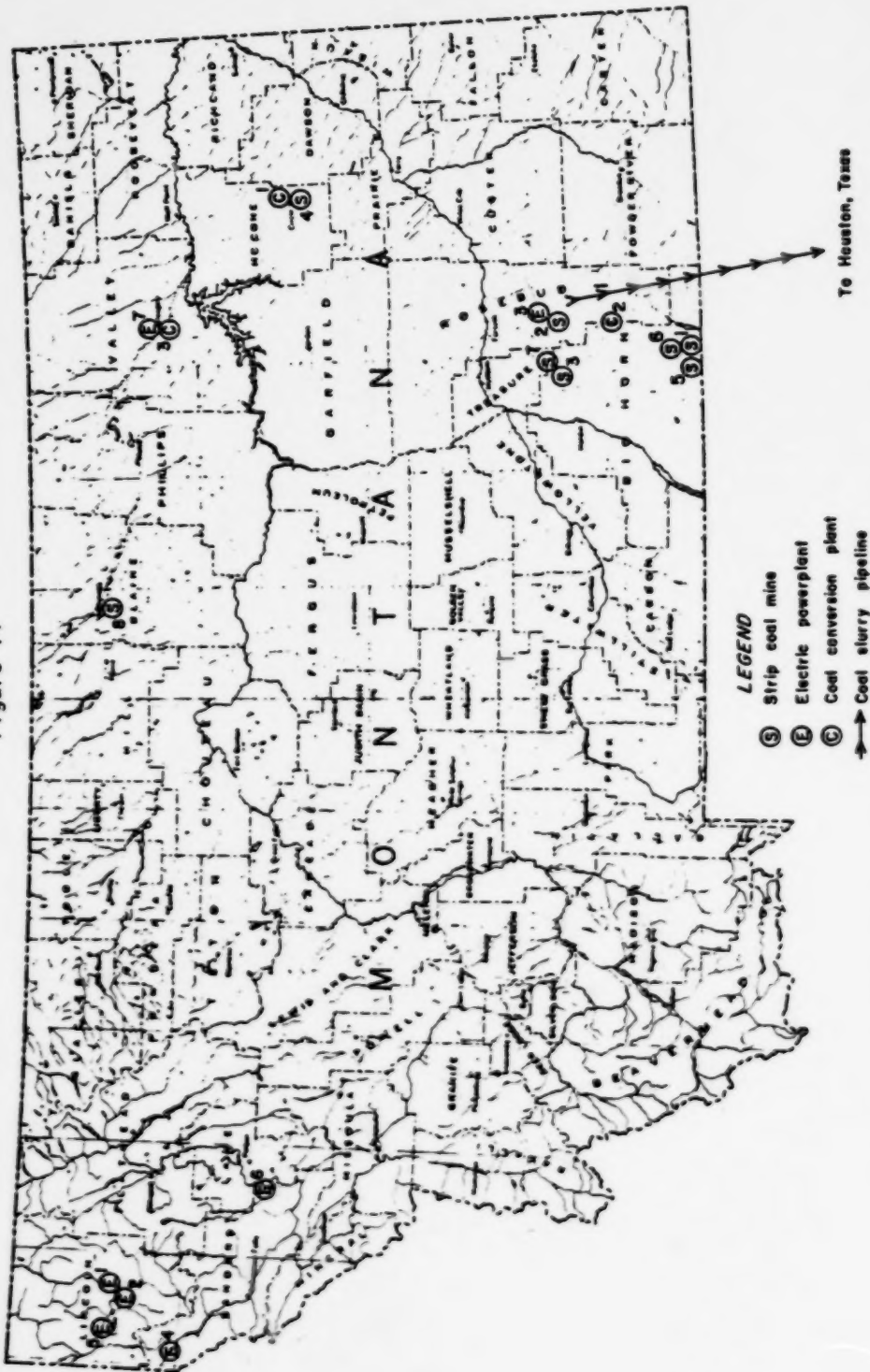
The Bureau of Mines Information Circular #8719, Projects to Expand Fuel Sources in Western States, lists fuel-related facilities that are planned, proposed or under construction in the state of Montana. Included within this listing are nine coal mines, seven electric power plants, four coal conversion plants and one coal slurry pipeline. (Refer to map on following page). Two of these projects are commented upon herein.

A study which was recently conducted, "Site Suitability for an Energy Center at Glasgow Air Force Base, Montana" revealed the possibility of developing a two-phase gasification and liquifaction "energy park" at the Air Force Base. The state of Montana would be the operator and no scheduled time lines have been released. In conjunction with this project, the Governor has created a task force to conduct a feasibility study relative to the construction of a gasification plant in Montana for the purpose of satisfying Montana energy demands, thus relieving the state of its present reliance upon Canadian natural gas.

The second project of increasing interest is a proposed coal slurry pipeline from southeastern Montana to Houston, Texas. This 36" - 40" pipeline would traverse five states, and extend 1,260 miles in length.

FUELS RELATED PROJECTS

Figure 14



SOURCE: Projects to Expand Fuel Sources in Western States. Washington, D.C.
Bureau of Mines, 1976.

Montana presently encourages public involvement in governmental affairs. Because an energy policy, when developed, will have far-reaching consequences on the Montana life style, the people of the state must take an active role in determining these issues. The Montana Energy Advisory Council has suggested that a program (similar to a recent assessment in Idaho) be conducted in an effort to determine the extent to which the people wish to pursue industrialization and growth.

Unemployment is higher in Montana than in several of the other Rocky Mountain prairie states. As has been pointed out, energy development will create job opportunities. But these opportunities will be for a highly skilled and specialized labor force which has not been available previously in the state. Therefore, job opportunities created as a result of energy development may benefit the unemployed of other states and of Canada as they are imported into Montana to fill the highly skilled and specialized requirements.

The future energy development activities and the related environmental issues will necessitate concerted efforts on behalf of the people of Montana, as decisions of today will result in the actions or inactions of tomorrow.

**Selected Post Secondary Institutions
With Formal Environmental Energy Programs**

Within the State of Montana there are three public community colleges and three private colleges. In addition, the Montana University System includes six entities located across the state.

A variety of environmental courses are offered. A few environmental programs are described herein as an overview of the available environmental education across the state.

The University of Montana was established in 1893 in Missoula. At the time of inception, there were 50 students and seven faculty members. Today, 9,000 students and 500 full-time faculty members compose this University, which is located on 201 acres of the main campus site.

Special facilities for the environmental studies students include: an environmental laboratory; an environmental library; and various bodies of water as well as forested areas in varying degrees of environmental degradation.

The Montana College of Mineral Science and Technology or the School of Mines was established in 1895 at Butte, an area of extensive mineral operations. Students work in the mines, mills or smelters. The Montana Bureau of Mines & Geology was established as a department of the College in 1919. Other components of the school include: mineral museum, minerals research center, seismograph station, and computer center.

The Northern Montana College was originally named the Northern Montana Agricultural and Manual Training School in 1913. The legislature

of 1927 allowed the addition of academic studies. Today there are three major divisions: Education; Pre-Professional and General Studies; and, Vocational Technical. The 1,100 students are located on a 105 acre campus. A new addition to the programs offered at Northern Montana College is the water-wastewater technology curriculum. This is the only post-secondary institution in the Montana University System which has combined and consolidated the vocational technical and academic areas of the water-wastewater training.

The following pages present environmental programs from several institutions of higher education. These programs are a description of the major programs in environmental/energy education across the state. The information was obtained by means of telephone interviews and catalogue review when available.

SENIOR INSTITUTIONS

University of Montana
Missoula, Montana

Program: Environmental Studies (M.S.)

Hours required for major: Quarter - 48-54
Program Inception: 1969
Staff Size: Fifty-four interdisciplinary staff members (53 Ph.D.'s
and 1 M.S.)
Enrollment: 40
Graduates (1976): 13
Placement: a majority are placed
Graduate Work: unavailable

Courses - Biological-Physical Science Option

General Botany
Ecosystem Biology
Biological Effects of Air Pollution
Botanical Effects of Water Pollution
Instrumental Methods and Physical Measurements
Environmental Chemistry
Applied Quaternary Geology
Resource Analysis
Computer Use in the Natural Sciences or Quantitative Environmental
Models

Courses - Social Science Option

General Botany
Environmental Economics
Geography of Ecosystems
The Environment and Politics
Population
Urban Sociology or Human Ecology

Courses - Optional Environmental Studies Electives

Special Topics
Environmental Internship
Research
Thesis
Lecture Series

Program: Resource Conservation (B.S., M.S.)

Hours required for major: Quarter - 100
Program Inception: 1957

Staff Size: unavailable due to the interdisciplinary nature of the program.

Enrollment: Approximately 80

Graduates (1976): (B.S.) 12, (M.S.) 3

Placement: unavailable

Graduate Work: unavailable

Courses

Dendrology

Soils

Ecology

Entomology

Logging

Milling

Preparation and Use of Wood

Mensuration

Regulation

Economics

Recreation

Range Conservation

Watershed Management

Wildlife Biology

SENIOR INSTITUTIONS

Montana College of Mineral Science and Technology
Butte, Montana

Program: Environmental Engineering (B.S.)

Hours required for major: unavailable

Program Inception: 1971

Staff Size: unavailable

Enrollment: 80

Graduates (1976): 8

Placement: 8

Graduate Work: 0

Courses

Unavailable

COMMUNITY COLLEGES/TECHNICAL INSTITUTIONS

Northern Montana College
Havre, Montana

Program: Environmental Health Technology: Water/Wastewater Treatment (A.A.)

Hours required for major: Semester - 99

Program Inception: 1976

Staff Size: Nine professionals

Enrollment: 12

Graduates (1976): 0

Placement: 0

Graduate Work: 0

Courses

Introduction to Environmental Health

Communications I, II

Technical Writing

Mathematics

Foundations of Biology

Chemistry

Botany

Microbiology

Environmental Health Practices

Physics for Environmental Health

Invertebrate Zoology

Conservation

Ecology

Special Topics for Water and Wastewater Operators

State Legislation

MONTANA GENERAL

TITLE:

Environmental Policy Act
Montana Code 69-6501

PURPOSE:

To provide for a state policy encouraging productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and stimulate the health and welfare of man.

DEFINITIONS:

ADMINISTERING AUTHORITY:

Environmental Quality Council
All State Agencies

AUTHORIZATIONS:

- To consider environmental amenities and values in state agency action;
- To submit environmental impact reports for all major actions and proposals;
- To provide technical assistance to local governmental units regarding maintenance of environmental quality;
- To review all statutory and regulatory policies to determine environmental quality compliance;
- To provide information concerning environmental quality trends and conditions;
- To conduct studies and investigations relating to environmental quality;
- To recommend legislation and policies to promote and improve environmental quality;
- To submit an annual environmental quality report.

MONTANA AIR

TITLE:

Clean Air Act of Montana
Montana Code 69-3904

PURPOSE:

To achieve and maintain such levels of air quality as will protect human health and safety.

DEFINITIONS:

- | | |
|--------------------|---------------------|
| 1. Air contaminant | 5. Advisory Council |
| 2. Air pollution | 6. Board |
| 3. Emission | 7. Department |
| 4. Person | |

ADMINISTERING AUTHORITY:

Department of Health and Environmental Sciences
Air Pollution Control Advisory Council

AUTHORIZATIONS:

To issue regulations pursuant to the act;
To issue orders to effect the act;
To establish ambient air quality standards;
To prepare a comprehensive plan for prevention, abatement, and control of air pollution;
To encourage local governmental units to control air pollution;
To undertake studies and investigations relating to air pollution;
To act as the state lead agency in air pollution matters;
To administer a permit program for air pollution sources;
To establish emission limitation levels;
To enter and inspect property in enforcement of the act;
To issue variances under the act;
To generally enforce provisions of the act.

PROHIBITED ACTS:

- To violate ambient air quality standards or emission limitations;
- To violate the terms of any permit;
- To interfere with enforcement of the act;
- To violate any orders or regulations issued pursuant to the act.

EXEMPTIONS:

Air contamination only within commercial or industrial plants.

PENALTIES:

- Criminal - fines of up to \$1,000;
- Civil - fines of up to \$1,000.

MONTANA PESTICIDES

TITLE:

Montana Pesticides Act
Montana Code 27-213

PURPOSE:

To provide for the control and registration of pesticides,
and to implement a program of pesticide applicator certi-
fication.

DEFINITIONS:

- | | |
|--------------------------|-------------------------------|
| 1. Active ingredient | 19. Inert ingredient |
| 2. Adulterated | 20. Ingredient statement |
| 3. Antidote | 21. Insect |
| 4. Applicator | 22. Insecticide |
| 5. Beneficial insects | 23. Label |
| 6. Commercial applicator | 24. Labeling |
| 7. Commercial operator | 25. Misbranded |
| 8. Crop | 26. Nematocide |
| 9. Dealer | 27. Nematodes |
| 10. Defoliant | 28. Person |
| 11. Desiccant | 29. Pest |
| 12. Device | 30. Pesticide |
| 13. Environment | 31. Plant regulator |
| 14. Equipment | 32. Public utility applicator |
| 15. Farm applicator | 33. Registrant |
| 16. Fungi | 34. Restricted use pesticide |
| 17. Fungicide | 35. Retailer |
| 18. Herbicide | 36. Weed |

ADMINISTERING AUTHORITY:

Department of Agriculture
Pesticide Advisory Council

AUTHORIZATIONS:

- To require the registration of all pesticides;
- To classify pesticides and restrict their usage;
- To issue regulations pursuant to the act;
- To regulate the storage and disposal of pesticides and containers;
- To require pesticide compliance labeling;
- To license pesticide dealers;
- To establish certification standards and categorize commercial applicators;
- To certify commercial and private applicators;
- To enter and inspect property in enforcement of the act;
- To allow special local need pesticide use.

CERTIFICATION OR LICENSING:

- Pesticide dealers must be licensed and take examination;
- Commercial and private applicators must demonstrate knowledge and be certified;
- Examination required of commercial applicators in one of four categories established.

PROHIBITED ACTS:

- To fail to comply with labeling requirements;
- To fail to register pesticides;
- To engage in business of pesticide application without license;
- To apply restricted use pesticides without proper certification;
- To sell pesticides without dealer license;
- To violate other act provisions.

EXEMPTIONS:

- Farmer on own land, state veterinarians, governmental research personnel.

PENALTIES:

- Violation constitutes a misdemeanor.

MONTANA POTABLE WATER

TITLE:

Laws Regarding Public Water Supply
Montana Code 69-4901

PURPOSE:

To protect, maintain and improve the quality and potability
of water for public supplies and domestic uses.

DEFINITIONS:

- | | |
|------------------|------------------------|
| 1. Contamination | 5. State waters |
| 2. Pollution | 6. Public water supply |
| 3. Drainage | 7. Person |
| 4. Sewage | |

ADMINISTERING AUTHORITY:

Department of Health and Environmental Sciences
Board of Health and Environmental Sciences

AUTHORIZATIONS:

To generally supervise all public water supplies;
To issue regulations pursuant to the act;
To give technical assistance on water supplies and water
purity;
To conduct water purification experiments;
To examine waters to determine their purity;
To enter and inspect property in enforcement of the act.

PROHIBITED ACTS:

- To pollute water supplies in any way;
- To engage in logging, railroad or manufacturing in a water supply watershed without pollution protection;
- To construct or alter water supply or distribution systems without prior approval.

PENALTIES:

Fines of up to \$1,000 or one year imprisonment.

MONTANA RADIATION

TITLE:

Radiation Control Law
Montana Code

PURPOSE:

To provide for the effective regulation and utilization of ionizing radiation sources.

DEFINITIONS:

- | | |
|------------------------|-----------------------------|
| 1. By-product material | 5. Person |
| 2. Ionizing radiation | 6. Source material |
| 3. General license | 7. Special nuclear material |
| 4. Specific license | 8. Registration |

ADMINISTERING AUTHORITY:

Board of Health
Radiation Advisory Committee

AUTHORIZATIONS:

To evaluate radiation hazards;
To issue regulations pursuant to the act;
To cooperate with other state and federal agencies;
To license and register radiation sources;
To maintain radiation source records;
To enter and inspect property in enforcement of the act;
To impound radiation sources in emergencies.

PROHIBITED ACTS:

To use, manufacture or otherwise possess unlicensed or
unregistered radiation sources;
To violate the terms of any license;
To violate other regulations or act provisions.

EXEMPTIONS:

Electrical equipment not primarily intended to produce radiation; other machines and material in process of manufacture or transportation.

PENALTIES:

Fines of from \$100 to \$1,000 or from 30 to 90 days in jail.

NRC AGREEMENT STATE: No

MONTANA SOLID WASTE

TITLE:

Control of Refuse Disposal Areas
Montana Code 69-4001

PURPOSE:

To control refuse disposal areas in order to protect the public health and safety.

DEFINITIONS:

- | | |
|------------|---------------|
| 1. Garbage | 4. Department |
| 2. Refuse | 5. Board |
| 3. Rubbish | |

ADMINISTERING AUTHORITY:

Department of Health and Environmental Sciences
Board of Health and Environmental Sciences

AUTHORIZATIONS:

To issue regulations pursuant to the act;
To approve all disposal areas prior to use;
To license refuse disposal areas.

PROHIBITED ACTS:

To dispose of garbage, rubbish, or refuse other than at a site permitted by the act;
To operate a refuse disposal area without a license;
To violate regulations issued pursuant to the act.

EXEMPTIONS:

Disposal of a persons own garbage or rubbish on own land.

PENALTIES:

Fines of from \$50 to \$500.

MONTANA SOLID WASTE

TITLE:

Junk Vehicle Disposal Law
Montana Code 69-6801

PURPOSE:

To provide for the enhancement of environmental conditions
and/or the control of the disposal of junk vehicles.

DEFINITIONS:

- | | |
|------------------------------------|-----------------|
| 1. Motor vehicle wrecking facility | 3. Junk vehicle |
| 2. Motor vehicle graveyard | 4. Person |
| | 5. Department |

ADMINISTERING AUTHORITY:

Department of Health and Environmental Sciences

AUTHORIZATIONS:

To issue regulations pursuant to the act;
To control junk vehicle locations and wrecking yards;
To license motor vehicle wrecking facilities;
To supervise local motor vehicle graveyards;
To encourage the crushing and recycling of junk vehicles;
To generally enforce the act.

PROHIBITED ACTS:

To operate a motor vehicle wrecking facility without a license;
To place junked motor vehicles in river channel areas;
To violate regulations issued under the act.

PENALTIES:

Fines of up to \$250 or 30 days imprisonment.

MONTANA SOLID WASTE

TITLE:

Refuse Disposal Districts Law
Montana Code 69-6001

PURPOSE:

To control the storage, collection, and disposal of refuse
and to provide for the creation of refuse disposal districts.

DEFINITIONS:

- | | |
|-------------------------------|-----------------------------|
| 1. Commissioner | 3. Refuse |
| 2. Family residential
unit | 4. Refuse disposal district |
| | 5. Board |

ADMINISTERING AUTHORITY:

County Boards of Commissioners
Local Governmental Units

AUTHORIZATIONS:

To create refuse disposal districts;
To generally supervise any refuse disposal sites;
To enforce state regulations relating refuse disposal;
To form joint refuse disposal districts.

MONTANA WASTE WATER

TITLE:

Laws Regarding Water Pollution
Montana Code 69-4801

PURPOSE:

To provide for a comprehensive program of water pollution prevention and abatement, and to improve the quality of the water of the state.

DEFINITIONS:

- | | |
|---------------------|--------------------------------|
| 1. Sewage | 10. Person |
| 2. Industrial waste | 11. Council |
| 3. Other wastes | 12. Department |
| 4. Contamination | 13. Local department of health |
| 5. Pollution | 14. Point source |
| 6. Sewerage system | 15. Owner or operator |
| 7. Treatment works | 16. Standard of performance |
| 8. Disposal system | 17. Effluent standard |
| 9. State waters | |

ADMINISTERING AUTHORITY:

Department of Health and Environmental Sciences
Water Pollution Control Advisory Council

AUTHORIZATIONS:

To classify all waters according to use;
To develop water purity standards;
To administer the state NPDES program;

AUTHORIZATIONS (Cont'd):

- To issue regulations pursuant to the act;
- To adopt effluent standards;
- To enforce pollution limitations and permits;
- To issue emergency orders;
- To act as the state lead agency in water pollution matters.

PROHIBITED ACTS:

- To cause or allow pollution of state waters;
- To construct or alter disposal facilities without permit;
- To violate the terms of any permit;
- To violate any emergency order;
- To violate other act provisions.

PENALTIES:

- General violations - fines of up to \$10,000;
- Willful violations - initial offense - fines of up to \$25,000 per day or one year imprisonment; subsequent offenses - fines of up to \$50,000 per day or two years imprisonment.

MONTANA WASTE WATER

TITLE:

Water Use Act
Montana Code 89-865

PURPOSE:

To encourage the wise use of the state's water resources and to provide for the best utilization, development, and conservation of the waters of the state.

DEFINITIONS:

- | | |
|-------------------|----------------|
| 1. Water | 9. Declaration |
| 2. Beneficial use | 10. Waste |
| 3. Appropriate | 11. Political |
| 4. Existing right | 12. Person |
| 5. Groundwater | 13. Department |
| 6. Well | 14. Board |
| 7. Permit | 15. Act |
| 8. Certificate | |

ADMINISTERING AUTHORITY:

Department of Natural Resources and Conservation
Board of Natural Resources and Conservation

AUTHORIZATIONS:

To issue regulations pursuant to the act;
To administer the water use permit program;
To regulate the construction and use of wells;
To generally prevent the contamination of groundwater;
To determine and supervise water use rights;
To prevent the waste of water resources;
To generally enforce the act.

PROHIBITED ACTS:

- To violate any water use rights as determined by the department;
- To violate the terms of any permit;
- To waste water usage;
- To violate any other provisions of the act.

PENALTIES:

Violation constitutes a misdemeanor.